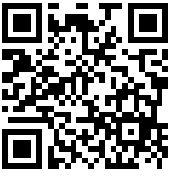
This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

https://books.google.com



UC-NRLF
$B 748 061

Digitized by Google

DOCUMENTS

Digitized by Google

Digitized by Google

DOCUMENTS

Digitized by Google

Digitized by Google

Great Britain

Ministry of Information

1/4 bd
new
Acc
Acquit

Miscellaneous
Publications

Volume
No. 8

Digitized by Google

doc dept.
purchase
Certificate

Digitized by Google

DEFENCE

MINISTRY OF INFORMATION



ASSURANCE OF VICTORY

H.M. STATIONERY OFFICE
LONDON : : 3d. net

Digitized by Google

Digitized by Google

THE ASSURANCE OF VICTORY

"The Allies are bound to win in the end, and the only question is how long it will take them to achieve their purpose"

(The Prime Minister,
November 26th, 1939)

MINISTRY OF INFORMATION

Digitized by Google

DOCUMENTS

CONTENTS

	PAGE
WHY WE ARE AT WAR	3
HOW THE WORLD LINES UP	5
THE FIGHTING FORCES	9
SINEWS OF WAR	19
THE HOME FRONT	25

Digitized by Google

DA10
A5
v.8

WHY WE ARE AT WAR

We are at war. Why?

Great Britain and France had undertaken to defend Poland against aggression. On September 1, German troops invaded Poland. Britain and France, therefore, were obliged by their pledges to declare war on the invaders.

But our guarantee to Poland was not the real cause of the war. We gave that guarantee in the interests, not of Poland alone, but of European civilisation as a whole. We gave it because Germany was trampling under foot all that we treasure most and because a halt had to be called if civilisation as we understand it was to survive.

We are, in consequence, at war because Nazism is the enemy of all that civilised men care for—social progress, learning and culture, freedom of the human spirit. If Nazism triumphs, these things will wither and die.

We are at war because the fate of Austria, Czecho-Slovakia and Poland—to say nothing of the German people themselves—has proved beyond all doubt that no nation is safe from the shadow of the Swastika and the tyranny of the Gestapo.

In the years following the Great War of 1914-1918, an effort was made to re-establish the unity of Europe on firm foundations. The League of Nations was formed to give the peoples of the world a way of settling their disputes by negotiation and arbitration, instead of by force.

Hitler from the first was opposed on principle to the ideas and practice of the League. He has shocked mankind by his disregard for fair and honourable dealing. He has trampled on the rights of his neighbours, just as he has trampled on the rights of the German people.

At Godesberg, in September, 1938, when the Nazi campaign of threats against the Czech Government was at its height, Hitler told Mr. Neville Chamberlain that the incorporation in the Reich of the German-speaking Sudetenland was his last territorial ambition.

"I assured the British Premier," said Hitler at the Berlin Sportpalast, at the end of September, 1938, "that when this

Digitized by Google

problem is solved, Germany has no more territorial problems in Europe . . . We do not want any Czechs."

In view of this hope—that the Sudetenland was really Germany's final territorial demand—the British and French Governments agreed at Munich, in September, 1938, to its incorporation in the German Reich.

At the same time Mr. Chamberlain realised that these hopes might be ill-founded. He therefore sounded a warning.

" If I were convinced," he said, " that any nation had made up its mind to dominate the world by fear of its force, I should feel that it must be resisted. Under such a domination life for people who believe in liberty would not be worth living."

In March, 1939, only six months after Hitler's statement that the Sudetenland was his " last claim," German troops marched on Prague and the independent State of Czecho-Slovakia was destroyed.

No further evidence was needed to prove that all Hitler's pledges were utterly worthless. His real goal now stood nakedly revealed—the domination of the whole of Europe by Nazism.

Great Britain had therefore no alternative but to turn to the policy which British Governments have consistently pursued in face of the attempts of any Power to dominate Europe by force—a policy of resistance in common with other peace-loving Powers in defence of law and order and the independence of free nations.

The Peace Front was the answer of civilised Europe to the Nazi threat. The British Government, in the months immediately following the capture of Prague, made a defensive agreement with Poland, and also guaranteed the frontiers of Greece and Roumania. Moreover relations between Britain and Turkey were drawn steadily closer, a process destined to culminate after the outbreak of war in the conclusion of a defensive alliance. Hitler was warned again and again that any further act of aggression would be resisted by the combined forces of the Peace Front.

In spite of these warnings, Hitler prepared his forces for an attack on Poland—a nation with which he had signed a non-aggression pact as recently as January, 1934.

Digitized by Google

On September 1 German troops invaded Poland. Without any formal declaration of war, and brushing aside all attempts at peaceful negotiation, the Nazi dictator had set out to conquer and enslave yet another independent people.

This time the aggressor's challenge has been taken up. Britain, in common with other peace-loving nations, is determined to throw her whole weight into this struggle for world civilisation and the rights of small nations.

♦ ♦ ♦

HOW THE WORLD LINES UP

What are the forces of aggression now ranged against us?

The enemy dominates about 110 million people.

Over a quarter of these are Poles, Czechs and other victims of aggression, who are simply under military occupation, as the Belgians were in 1914-1918. **The Nazis in fact have to reckon on widespread enmity within their own camp.**

Himmler, chief of the Nazi Secret Police, has confessed that they cannot even be sure of their own people. Their opponents in Germany, crushed and silenced during peace-time, may well prove a source of danger now that war has come.

In Europe, where they are strongest, the Nazis command well under a quarter of the population. Outside Europe they have hardly any support at all. They have cleverly exploited the bogey of Russian support. We shall see later what this support amounts to.

What are the forces ranged on our side?

Citizens of the British Empire alone outnumber the population of enemy territory by more than four to one.

For every person dominated by Hitler SIX have already come in on our side. For every person living in Hitler's territory there are EIGHTEEN outside.

The balance of man-power is already tilted heavily against the Nazis. What is their strategic position?

Digitized by Google

As long as they kept the peace, the Nazis held a key position on the Continent. As long as they kept the peace, they were able to wield a powerful influence over their neighbours. As long as they kept the peace, they could draw essential food supplies and raw materials from the far corners of the earth.

By their own acts of aggression, the Nazis have now destroyed their own security. Faced by the immense forces of the Allies, they are shut off from resources without which they cannot possibly win a prolonged war. A short war is their only chance of survival for, as time goes by, Hitler will find himself beaten by hard economic facts. Every leaf torn off the calendar means greater danger to the Nazis. Every day that passes brings us greater strength.

Unlike the Nazis, we can draw man-power and war resources from every continent. All over the world people are working for the Allies. Wheat farmers and lumberjacks in Canada, rubber planters and tin miners in Malaya, aircraft workers in Australia—all these men, and millions like them, are throwing their weight behind the Allied cause.

Above all, our command of the sea is beyond challenge.

In the Great War of 1914–1918 we were unable, for political reasons, to use our sea power to the fullest possible extent. For two whole years, therefore, Germany obtained large supplies of food and materials from neutral countries.

This time our mastery of the sea can be and is being used to the full, and from the very start.

When at length in the last war our blockade of the Central Powers could be made really effective—in 1917—German resistance began to break down. The Germans themselves have admitted that they were beaten mainly because of this stranglehold. At that time they were masters of four times the territory they now control, including Roumania and large areas of Russia.

This time we have begun where we left off in 1918.

This time, moreover, neutral opinion is overwhelmingly unsympathetic to the Nazis.

Digitized by Google

The aims of the Soviet Union were declared by M. Molotoff in a speech on October 31, 1939, to be "a free hand in international affairs, *the continuation of neutrality*, and the cessation of the war."

This decision came as a bitter disappointment to the Nazi leaders, who had been confident of Russian military support. It meant the collapse of Ribbentrop's plans.

The United States have also announced their determination to remain neutral. And this decision does not mean that they are altogether impartial in their feelings. Many months before war broke out President Roosevelt had put the American attitude plainly:

> "There are many methods short of war, but stronger and more effective than mere words, of bringing home to aggressor governments the aggregate sentiments of our own people. At the very least we can and should avoid any action, or any lack of action, which will encourage, assist, or build up an aggressor."

President Roosevelt's Neutrality Bill became law in November, 1939. This measure repeals the neutrality legislation of 1937, under which the President was compelled *automatically* to apply an embargo on the supply of arms and munitions to Powers engaged in a war. It replaces the old legislation by a "cash and carry" plan. This plan permits all countries to obtain war materials from America—**provided they pay cash and carry the goods in their own ships.**

Britain and France, because of their command of the seas, can now get large quantities of arms and munitions from America. Germany cannot.

Mr. William Bankhead, Speaker of the House of Representatives, voiced the feelings of the majority of Congress.

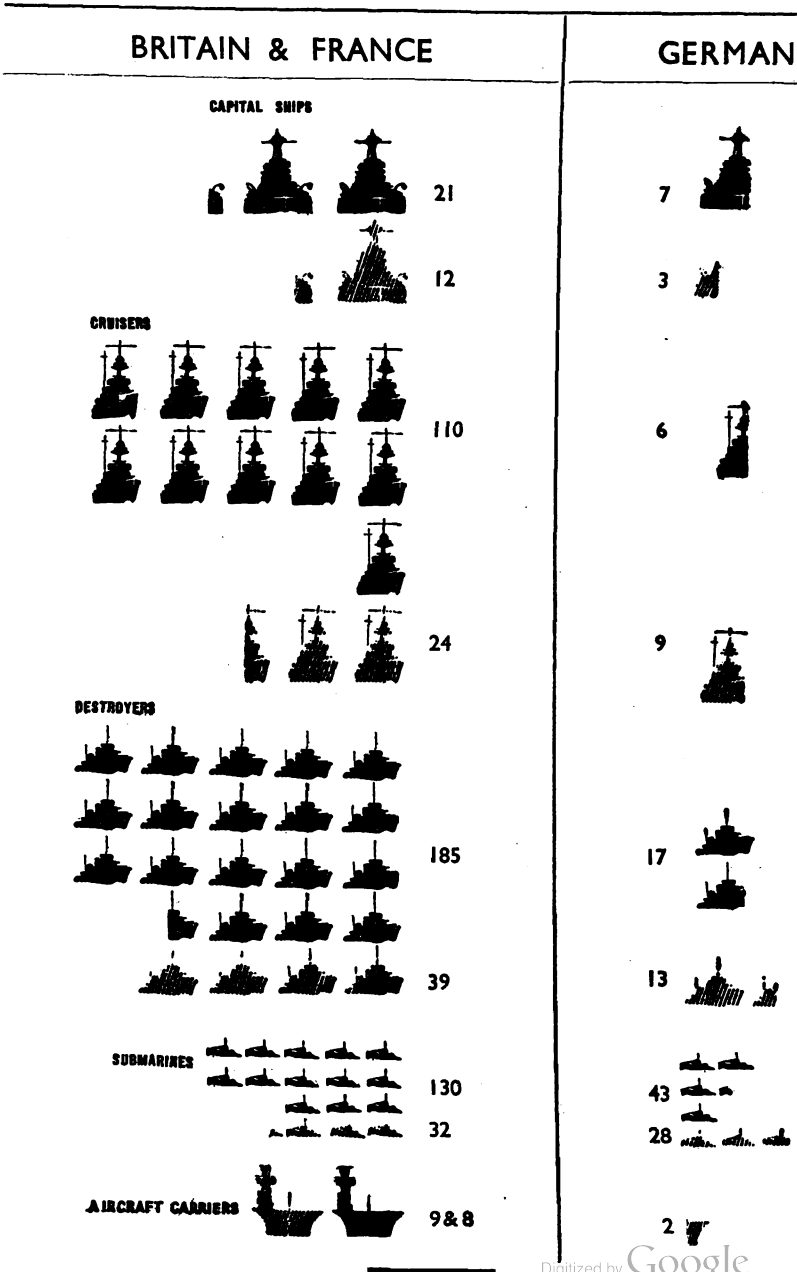
"You cannot place an embargo on man's mind and heart," he told the House, "**Thank God we are still entitled to express our views and our preferences for the democratic liberties of France and Britain to the rule of the concentration camp and the firing squad.**"

Digitized by Google

OUR FLEETS—AND THE ENEMY'S

February 1, 1939

One unit=ten vessels—building and projected vessels shaded.



Digitized by Google

Source: *Fleets* (H.M. Stationery Office 2s. 0d., 1939). Cmd. 5936.

THE FIGHTING FORCES

Victory in a modern war depends mainly on three things.

It depends on the fighting power of armies, navies and air forces.

It depends, too, on the ability of a nation to keep itself supplied with key war materials.

Above all, it depends on the strength of the "home front"—on the capacity of factories to keep going at full blast, and on the will of the people to stand up to the strain of war.

First let us see how our armed forces compare with those of the enemy.

SEA POWER

Our power to win the war depends mainly on our command of the sea.

In 1914 the German Navy was strong enough to offer a serious challenge to our own. **To-day the British Navy is by far the strongest in Europe. The French Navy comes second.**

We spend three times as much on the Navy as we did in 1913–14. We have far more of every kind of fighting vessel than Germany—more battleships, more cruisers, more destroyers and more aircraft carriers.

After setting aside enough warships to cope with the German fleet in European waters, Britain and France have plenty to spare for action in other oceans, wherever they may be needed.

The greatest menace facing us, in these early months of the war, is the Nazis' indiscriminate use of the submarine. By scattering submarines along our trade routes, and by using them to attack merchant ships—in defiance of the laws of war and humanity—the enemy is trying to cut off our supplies of food and raw materials.

How can the submarine be fought and beaten?

The chief enemies of the submarine are the patrol ships. By means of detectors, these ships can tell where the submarine is. By means of depth charges, they can destroy it.

In 1916 and 1917, German U-boats took such a heavy toll of our shipping that we were faced with the threat of starvation.

Digitized by Google

After a long struggle, the German campaign was defeated. Anti-submarine methods were developed, and from 1917 our merchant vessels were given the added protection of the convoy system.

Throughout the whole war we destroyed 191 enemy submarines. **Three-quarters of these were sunk during the last two years.** In the end the U-boat was fighting a losing battle against our patrols.

The Germans hope once again, by breaking every rule of international law and common humanity, to sink without trace large numbers of merchant ships on the high seas, but their hope is still-born. We have already shown that we can deal with them.

At first, while submarines were scattered at strategic points on our trade routes, it was to be expected that we should suffer losses. But the Nazis will have a hard job to keep their campaign going. Lack of bases on the main ocean routes must narrow down the area in which their submarines can work.

Anti-submarine methods have made rapid strides since the last war.

While a submarine is under water its speed amounts to less than ten knots (about 11½ miles an hour). When it comes up, it is exposed to attack from warships and aircraft. Once a submarine has been found, the chances are that it is trapped and doomed.

This fact is bound to undermine the morale of enemy submarine crews. **In the last war the losses were so heavy that it became impossible for Germany to go on manning submarines on a large enough scale.**

This time the German submarine fleet has already suffered badly. **Mr. Winston Churchill, the First Lord of the Admiralty, has estimated that out of about sixty U-boats ready for action at the beginning of the war, about one-third were sunk or seriously damaged during the first six weeks.**

On November 8, 1939, Mr. Churchill told the House of Commons that on a conservative estimate "the losses of U-boats lie between two and four in every week, according to the activity which prevails." In other words, we are putting U-boats out of action at about twice the rate (1 to 1½ a week) of the sinkings in 1917–18.

Digitized by Google

In the last war the German Navy was so strong that a great part of our fleet had to be kept in home waters.

This time far more of our fighting vessels are free to patrol the oceans. This time, moreover, we are able to use aircraft to find out where the raiders are, and to destroy them by bombing. In the Fleet Air Arm the British Navy to-day has a powerful air force of its own, and one which can play a big part in defending our merchant ships against enemy marauders.

We must face the fact that enemy raiders will be a menace in the early stages of the struggle. As long as they remain scattered over the oceans, we must reckon with the possibility of their inflicting losses on our merchant vessels. But there is every reason to believe that we shall round them up quickly and successfully.

We can also expect attacks by enemy aircraft on our merchant shipping at sea and in harbour. Much effort and money have been devoted to guarding against their new menace, and the experience of the first weeks of war has given us every confidence in our power to deal with it.

The same is true of Germany's much-vaunted secret weapon of the "magnetic mine." At the moment this new menace is taking its toll of the shipping of Britain and neutral countries indiscriminately. But the Prime Minister has assured us that "already we know the secrets of the magnetic mine, and we shall soon master the magnetic mine as we have already mastered the U-boat."

In the first seven weeks of the war our total losses of merchant shipping amounted to less than 1 per cent. of our total tonnage afloat. Even if the enemy achieved success at the same rate throughout a four-year war, we should still be left with about 70 per cent. of the tonnage with which we started—to say nothing of new tonnage built in the meantime.

ARMIES

Our main strength lies in our command of the sea—in our power to cut off the enemy from essential supplies, and to make sure that we ourselves are kept well provided with the food and materials we need.

Digitized by Google

bayonets and two machine-guns a battalion. **Now only 20 per cent. of the fighting troops are infantrymen, with 50 Bren guns, 22 anti-tank rifles, and other weapons as well with each battalion.** It will be seen by this one example how much more effectively armed with fire power is the present expeditionary force."

Britain has not only sent troops to the Western Front. Large forces have been built up in the Middle East and our garrisons in other parts of the world have been reinforced with men and material. Although these British forces have not yet been called on to take part in actual fighting, they are of immense importance to the Allied cause.

It was in fact largely due to the reassuring effect of our armed strength in this vital strategic area that it was possible to bring about the Anglo-Turkish alliance, the results of which are equivalent to a first-class victory in the field.

At the beginning of the last war the British forces were small compared with those of the enemy. But our military strength grew as the struggle went on. By mobilising their manpower Britain and the Dominions were soon able to put huge armies into the field.

Once again the nations of the Commonwealth can build up their strength as the war goes on, and their big reserves of men are mobilised.

In 1914, German invaders overran Belgium and Northern France. These countries were at that time largely unfortified.

To-day the Belgian frontier is strongly fortified, while along the whole length of France's eastern frontier runs a great barrier of steel and concrete—the famous Maginot line. French soldiers and engineers put ten years' effort into building it. Germany's Siegfried line, on the other side of the frontier, was rushed through at great speed.

A number of German military experts have publicly admitted that all hopes of a " lightning " war are false.

One leading authority, Colonel Thomas, wrote these words in a volume edited by a member of the German General Staff: **" Our mistaken attitude to the question of a short war has once already caused our ruin, and for that**

Digitized by Google

reason we must not let ourselves be led into wishful thinking about a short war in this age of swarms of tanks and aeroplanes."

We do not have to defeat the Nazis on land, but only to prevent them from defeating us. If we can succeed in doing that, we can rely on our strength in other directions to bring them to their knees.

AIR FORCES

As we have seen, the Nazis cannot hope to win the war on sea or on land. What are their prospects in the air?

More than any other nation they depend on the striking power of their bombers.

They may be able to inflict grave losses. For a time the Allied peoples must be ready to endure considerable damage and perhaps many casualties.

But—this is the vital question—can the Nazis keep it up?

They cannot possibly keep it up unless their present air forces are backed by big enough reserves of trained pilots—and unless they can produce 'planes and equipment and fuel rapidly enough to stand the pace.

If they lack any of these things, they will be in danger of weakening under the heavy rate of wastage once their "knock-out" effort has failed.

The Italian *Ala d'Italia*, a well-informed journal friendly to Germany, reported that in April, 1939, the German Air Force reached a total of 6,000 first-line aircraft. It also said that Germany was then building about 600 'planes a month, and that 2,800 new pilots were recruited in 1938.

To keep this big air force going in a "total" war against Britain and France, they would need to make up for losses amounting to at least 50 per cent. a month. In other words, they would have to build over 3,000 'planes every month and to recruit new pilots on the same scale.

Can the Nazis do it?

Digitized by Google

Of all countries, Germany will have the biggest difficulty in carrying out such a huge programme.

In their efforts to build up a gigantic air force, the Nazis have mobilised all the available skilled labour in Germany. Heavy overtime, for week after week, and month after month, even in peace-time sapped the health of the workers. The German labour force is thus very badly placed for standing the strain of war.

Nor can Germany hope to recruit enough new pilots to keep a huge air force going under conditions of intensive warfare. There are plenty of men fit to obey orders, but not many who are able to handle an aeroplane for hours on end.

Finally, there is the danger of oil shortage.

In peace-time this was already a serious problem. Speaking to government officials and Nazi leaders (at the end of February, 1939), Dr. Brinkmann, then Vice-Director of the Reichsbank, is reported to have made this frank confession:

> **"What is the use of all these aeroplanes if we have no oil for them—and we are still short in that respect!"**

Now matters are far worse. The Nazis need far greater quantities of oil than in peace-time.

In peace-time they had to import two-thirds of their oil. Much of this came from countries which they cannot reach any longer.

When their first "knock-out" effort is spent, many things will begin to tell against the Nazis—their heavy losses of bombers, their lack of new pilots, their lack of industrial reserves and their lack of oil.

They will, moreover, have to reckon with the powerful air forces of Britain and France.

The Royal Air Force has expanded at an immense rate during the past five years.

No nation discloses publicly the *whole* of its aircraft strength and production. But according to figures showing the *officially disclosed* increase in our aircraft, we now have at home four times as many "first line" 'planes as in 1934–5—apart from a growing force of several hundreds overseas. But this statement

Digitized by Google

does not do anything like justice to the remarkable advance which has taken place, for it leaves out of account the very large number of *undisclosed* additions to the Royal Air Force.

On the outbreak of war there were five times as many men in our regular Air Force as there were five years ago. The numbers in the Auxiliary Air Force and Reserves were seven times as high as in 1934-5.

Within a fortnight of the outbreak of war as many as 10,000 new recruits were accepted for service as pilots, crew and maintenance personnel. Plans have been made for a continuous expansion of the Royal Air Force as the war goes on.

R.A.F. squadrons have been established on the Western Front for some time, side by side with French squadrons. During the first few weeks of war, aircraft in the Coastal Command flew about one million miles on reconnaissance, convoy and anti-submarine patrols and provided escorts for over one hundred convoys. "We have confirmed from prisoners' statements," Sir Kingsley Wood, Secretary of State for Air, told the House of Commons (October 10th, 1939), "that the mere presence of an aircraft is sufficient to make a submarine submerge and remain submerged, and that the presence of an air escort often prevents a submarine commander from attacking a convoy."

Day after day our bombers have carried out reconnaissance flights over Germany. A complete photographic map of the Siegfried line has been made, and millions of leaflets have been dropped on German towns. There is evidence that these leaflets are being picked up in spite of the heavy penalties imposed by the Nazi Government. Copies have actually been found in the possession of German prisoners of war.

In addition to the R.A.F. itself we have the Fleet Air Arm—Britain's "second Air Force"—which is now as large as the main air forces of many countries.

The Dominions have played a big part. During peace-time many hundreds of pilots from different parts of the Empire were pouring into the R.A.F. Since the outbreak of war arrangements have been made with Dominion Governments for a rapid expansion of the training organisation for pilots, observers and gunners.

Digitized by Google

In Canada, far out of reach of enemy bombers, young men from many parts of the Empire—including Great Britain—will be given advanced training to fit them for service in the line.

"The aim, in short," as Sir Kingsley Wood told the House of Commons, "is to achieve by co-operative effort air forces of overwhelming strength."

The French Air Force has also expanded at a great rate in recent months and production is now **eight times as high as in September, 1938.** France has a number of splendid modern aircraft factories, and the design of the latest French machines is outstanding.

The superiority of French fighters has already been proved on the Western Front. During the first four weeks of war the French Air Force lost only eight fighters. The Germans lost 24.

In a great air battle on November 6, 1939, nine French fighters attacked a group of twenty-seven German fighters. Nine of the Nazi 'planes were brought down, whilst every one of the French 'planes returned safely.

With their immense reserves of men, factories and materials, the Allies can have every hope of keeping pace in war-time with the huge month-to-month demand for new 'planes and equipment.

"At the outbreak of war," said Sir Kingsley Wood, "the rate of aircraft production represented an achievement unprecedented in this country in time of peace . . . Immediately war broke out our carefully prepared plans for greatly increased production were put into effect. They will mean in due course **a rate of production more than twice the considerable figure we have now reached.**"

Here again the Dominions are giving invaluable help. Their aircraft factories, far beyond the range of enemy bombers, are working at top speed for the Allied cause.

Digitized by Google

SINEWS OF WAR

Armed forces alone cannot win a war.

However large a nation's armies and navies may be, it cannot carry on the fight without certain key resources—food for its people and raw materials for its factories. These are the sinews of war.

How do we compare with the enemy?

Because of our command of the sea, we can continue to draw vital materials from every part of the world.

The Nazis, on the other hand, must sooner or later find themselves in great difficulties.

Their share in total world production of many of the most vitally important war materials is very small indeed. In peace-time they had to get a large part of their requirements of these materials from countries which they cannot now reach. Russian help cannot greatly alter the position. Russia actually ranks lower than Denmark as an exporter, and exports cannot be multiplied in a day.

Now that war has come, they will not be able to get anything like as much nickel, rubber and copper as they need. They will have to use substitutes for these things, at a heavy cost both in money and man-power.

No war material is more vital than OIL. This is a war of machines—of aeroplanes, tanks, motor vehicles. Without enough oil machines come to a standstill. And what is wanted is not simply crude oil as it comes out of the earth, but refined oil—the product of elaborate plants which take a long time to build.

Here again the outlook for Nazi Germany is black.

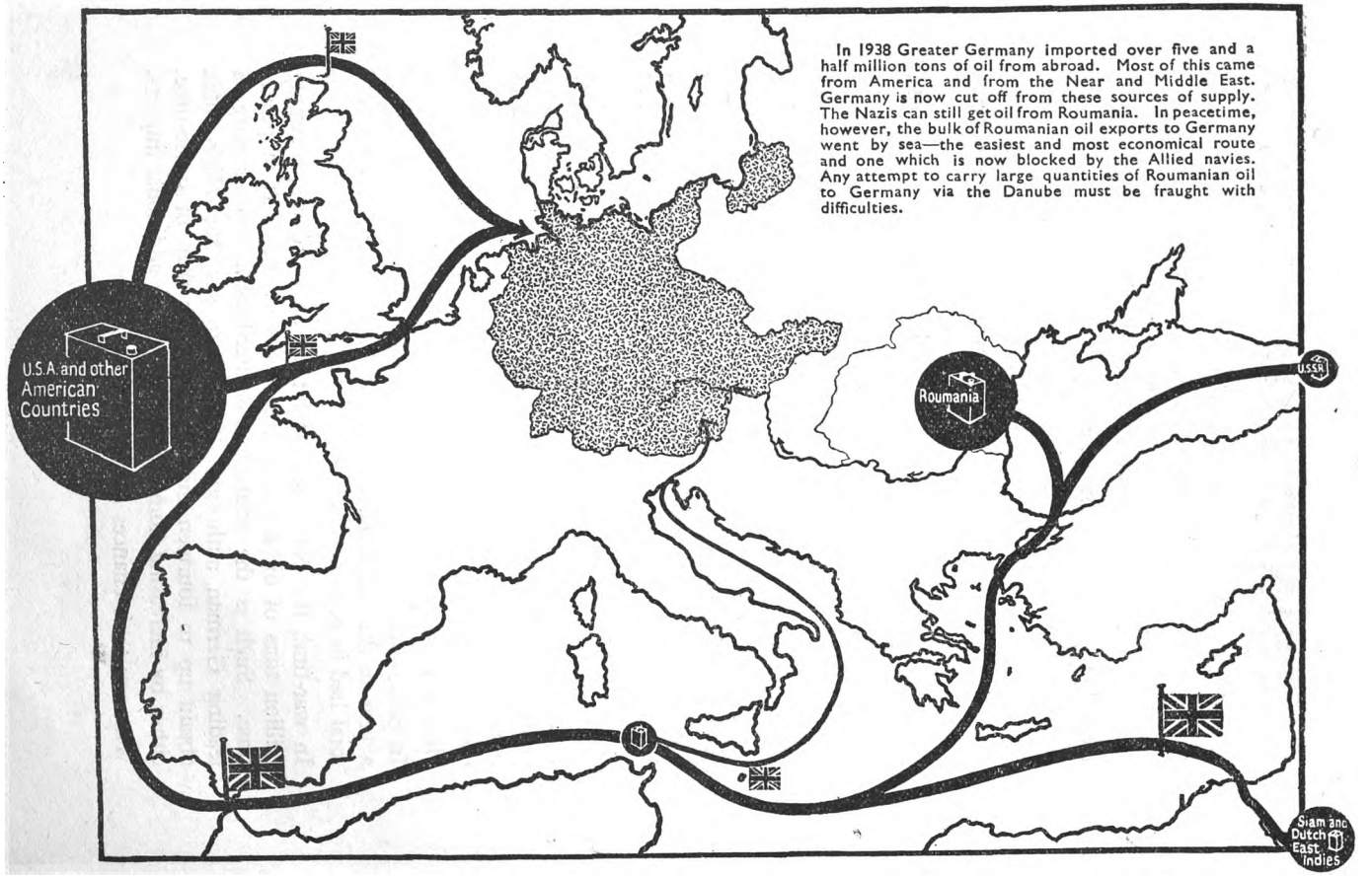
In peace-time the Germans used nearly seven million tons of oil a year in the old Reich alone. No less than *two-thirds* of the total had to be imported.

In war-time the Nazis probably need anything up to twenty million tons of oil a year—three times as much as in peace-time. Such is the admission of Ferdinand Friedensburg, a leading German authority. That is to say, the Nazis must obtain up to fourteen million tons more than in peace-time, either by increasing home production or by additional imports.

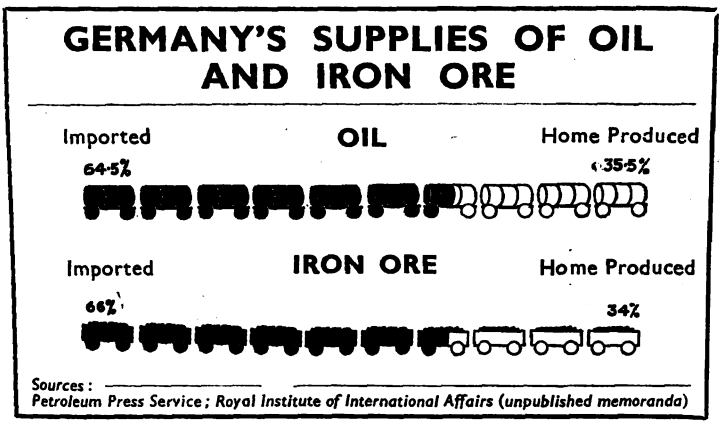
What are their chances of getting it?

Digitized by Google

WHERE GERMANY'S OIL CAME FROM IN PEACETIME



Digitized by Google



This chart shows the extent to which Germany, in 1938, depended on imports for its supplies of oil and iron ore. The figures do not include Austria and Czecho-Slovakia, but their annexation has increased the total dependence on imports.

In peace-time the Nazis obtained the greater part of their oil from the United States and other American countries. Now that war has come they are cut off from these sources of supply. They may be able to turn to Soviet Russia for some part of their war requirements, but the WHOLE of Russia's oil export (about a million tons a year) would amount to no more than ONE-FIFTH of the total imported by Greater Germany in peace-time. **And petrol, which the Nazis most need, forms only a small part of the oil exported from Russia.**

What is more, the Nazis would have great difficulty in transporting the oil from Russia to Germany. The small quantity of Russian oil and petrol supplied to Germany in peace-time went by way of the Black Sea, the Mediterranean and the Atlantic to Germany's North Sea ports—**a route which is now closed to the Nazis.** They cannot hope to carry large quantities of oil along the obvious alternative route—via the Black Sea and the Danube—owing to their lack of tankers, barges and tank wagons. The Danube, moreover, is a very difficult river to navigate, and its lower reaches are icebound during part of the winter.

They might, in the second place, try to increase their production of synthetic oil from coal. This method is very costly, and even in peace-time used up enormous quantities of coal. Any attempt

Digitized by Google

to raise the oil output still further by this means would place an even greater strain on German coal resources. Great difficulties, moreover, stand in the way of increasing coal production on a large scale. Mining is a highly skilled job, and miners cannot be trained in thousands overnight.

The Nazis might, on the other hand, seize the Roumanian oil-fields.

But even if they succeeded in getting the oil-wells intact—and this is extremely doubtful—their problem would not be solved. **The whole Roumanian and German oil production put together would not supply anything like half the Nazis' wartime needs.** Much of the Roumanian oil, moreover, is of a kind which yields very little aviation spirit.

It is quite clear that there is a big gap between Nazi Germany's war-time oil needs and the amount which can be produced in territory dominated by Berlin. For a short time this gap may be filled by drawing from stocks built up in peace-time. When these stocks run out, the Nazis will have immense difficulties in obtaining the huge oil supplies they need.

What are Germany's chances of getting enough of another vitally important war material—IRON ORE?

On the eve of the last war, the Germans were producing THREE-QUARTERS of all the iron ore they needed. In those days their richest ironfield was in Lorraine.

To-day the Lorraine ironfield lies on the other side of the Maginot line.

In peace-time the Nazis produced only ONE-THIRD of their iron ore. Germany thus depends far more on foreign supplies than in 1914. **In war-time this spells danger.** Here Russia can be of little help. The Russian output of iron ore has increased greatly in recent years—but the Russians need it all themselves. They only export a trifling amount.

Even before war broke out the shortage was so acute that the Nazi Government combed the country for scrap-iron. Tramlines, for example, were torn up, and park railings were removed.

Now let us turn to the food position.

Our command of the sea is a guarantee that the Allied peoples will be kept supplied with enough healthy food.

Digitized by Google

The French are in any case able to produce the greater part of their food at home. Justus Schmidt, the German military writer, has stated that " the situation of France as regards her supplies of agricultural products in case of war is very favourable." Germany presents a very different picture.

Take, for example, the question of fats.

Among the most important fats are table oils, pure vegetable fats, margarine, bacon, lard, butter and cheese.

In peace-time the Germans had to get one-half of their fats from abroad. This was fatal once : it will be fatal again if the German military effort and morale do not collapse first. The German home front collapsed in 1918 in spite of the fact that they controlled a large part of south-east Europe.

In *The German Fat Plan*, based on official German statistics, Dr. Karl Brandt reveals the German position. In 1929 Germany consumed 1,863,000 tons of fats. By 1936 this figure had risen to 2,044,000. Despite all efforts made to raise home production, over one-third of the total had to be brought from abroad.

Dr. Brandt concludes that although it might technically be possible to " close the fat gap " the growth of population and other factors makes it very unlikely that the deficit can be got below at least 400,000 tons in the next few years. This is equivalent to the needs of thirteen million Germans—one-sixth of the total population.

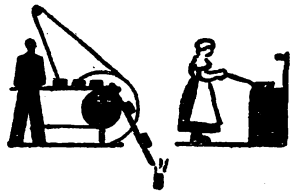
In peace-time the Germans imported most of their fats from Russia, China, Argentina, British West Africa, British India, the Dutch East Indies and the Antarctic. **Most of these sources are beyond Germany's reach in wartime.**

At one point after another the German war economy depends on foodstuffs and raw materials which can neither be produced in adequate amounts at home nor imported from countries which Germany can reach.

The Nazi Government, intending sooner or later to challenge the peace-loving nations, recognised the dangers of dependence when it launched the Four-Year Plan of self-sufficiency. But even under peace conditions Germany came nowhere near to being self-sufficient. The main outcome of the Plan has been to produce many of the effects of a blockade against Germany even before the outbreak of war.

Digitized by Google

NATIONAL INCOMES



VALUE OF GOODS AND SERVICES PRODUCED ANNUALLY

One Unit = £500,000,000

GREAT BRITAIN



DOMINIONS AND INDIA



FRANCE



GERMANY



Digitized by Google

THE HOME FRONT

In our struggle with Nazi Germany victory will finally depend on the strength of the "home front."

Modern war is not only a conflict between armies, navies and air forces. It is a struggle between the industrial power and morale of nations.

More and more the test of a Great Power is not how many soldiers, *but how many* factories *it possesses, and how long it is in a position to keep them going at full blast turning out aircraft and guns, shells and uniforms, and all the other needs of a modern war.*

The main elements in a nation's home front are :—

the size of its national income and national wealth ;

the amount and efficiency of its industrial capacity ;

the quantity and quality of available labour force ;

the ability of home defence to prevent production from being stopped or interrupted by land invasion, sea bombardment, blockade and air attack ;

and above all :

the will of the people, in spite of hardships and casualties, to carry on and see the struggle through to a victorious end.

PAYING FOR THE WAR

We cannot expect to pass on the cost of the war to our great-grandchildren. That old idea has been exploded.

Each country must bear the cost of the struggle from week to week, from month to month. It must pay for the war out of its *national income*, except in so far as its capital investments overseas can be drawn upon to buy resources from neutrals.

By the "national income" of a country is meant the total value of goods and services produced by its inhabitants every year. How do the national incomes of the Allies compare with that of Germany ?

The chart opposite, which is based on estimates published recently in a German economic journal, **shows quite clearly that the Allied nations are in a much better position than Germany to bear the heavy cost of a modern war.**

Digitized by Google

Only by spending as much as one-quarter of the German national income on armaments—before war broke out—have the Nazis been able to threaten the Allied Powers.

To make this programme possible, they have placed a crippling burden on the shoulders of the German people. They have strained German industry almost to the limit.

They have already raided most of the hidden reserves on which other governments can draw in time of war.

Their gold reserve, for example, stands at a very low level—despite the amounts seized from Austria and Czecho-Slovakia, and from private German citizens. Even if we allow for undisclosed reserves, the total figure cannot possibly be more than about £100,000,000. **The Germans have far less gold now than they had in 1918, after four years of warfare.**

Having only small reserves of gold, scarcely any foreign exchange or securities abroad, and no credit, the Nazis will find great difficulty in obtaining even the most essential raw materials from overseas, except within the small area which they dominate by force.

Their plight is made even more desperate by the British Government's decision (November 21, 1939), as a reprisal against the unrestricted U-boat and mine campaign, to seize exports of goods shipped directly or indirectly from Germany.

As the struggle goes on they will find themselves overwhelmed by the superior economic strength of the Allied Powers. The weight of resources on our side is even greater than in 1914-18, when Britain's industrial efficiency was much lower and the industrialisation of the Dominions and Turkey had hardly begun.

INDUSTRIAL STRENGTH

As we have already seen, the staying-power of a nation at war depends largely on the ability of its factories and workshops to keep pace with the demands of the armed forces.

How do the leading countries stand in this respect?

Measured by sheer output, Germany has in peace conditions one of the strongest industrial systems in the world. The Reich official figures estimate the German share in world industrial production as rather more than 15 per cent. in 1938.

Digitized by Google

But German industry suffers from weaknesses which will place it at a grave disadvantage under the stress of war. The Nazi armament drive has meant the operation of plant without proper maintenance, and large numbers of key workers have been lost through conscription and persecution.

Britain and France have kept their industries linked to the world economic system, with its enormous reserve of resources. Nazi Germany, on the other hand, has deliberately cut itself adrift from the rest of the world. This policy of "autarky" brought certain benefits as long as peace prevailed. At the cost of a reduced standard of life, it meant fuller employment, and it made Germany less dependent on other countries.

But soon, under the stress of war, the Nazi regime will pay dearly for this policy.

Dr. Brinkmann, then Vice-Director of the Reichsbank, in the remarkably frank speech already mentioned, is represented as having warned the Nazi leaders that they were heading for disaster:

> "The three pillars of a national economy are (1) Labour, (2) Raw materials, (3) Capital. **In our country all three are entirely exhausted** . . . We have mortgaged the future up to the hilt. **The treasury is empty.** There are not enough savings available in the country to meet our current financial needs and moreover they are growing less."

Here is an example of Germany's dangerous industrial position, given in *The Economist's* Berlin report for April 29, 1939:

> "Since armaments have a heavy and prior claim on machine tools, delivery periods now run to as long as three years. . . In sum the machinery industry is working at full stretch. The branches stimulated by armaments are working at 120 to 150 per cent. of their normal capacity."

Although half a million workers were taken into the industry between 1932 and 1939, the average working time had to be pushed up to over fifty hours a week.

The truth is that for some years the German industrial machine has been worked under what has amounted to war conditions.

Digitized by Google

It has been kept going at such a high pitch that its performance cannot be increased very far to meet needs of war.
The Allied nations, on the other hand, have a huge reserve of unused capacity and manpower.

WORKERS AND THE WAR

Success on the home front does not depend on factories and machines alone. Even more important are the goodwill and morale of the men and women who run the machines.

The Nazis have reduced the workers to something like serfdom. Everything has been sacrificed to the demands of a vast war machine.

Official Nazi information reveals the plight of the German worker. The weekly report of the German Institute of Business Research admits that **by the end of 1938 skilled workers were earning less than four-fifths of the wages they received ten years earlier under the Republic. The wages of unskilled workers had sunk below two-thirds of their 1928 level.**

Out of this greatly reduced pay-envelope, the German worker has to pay back a large proportion to the State. He has to pay heavy taxes. He has to pay insurance contributions. He has to pay dues to the many organisations controlled by the Nazi Party. He is compelled to make " voluntary " contributions to funds such as Winter Relief.

A German worker often has as much as twenty per cent. deducted from his wages.

An unemployed man in Germany, even if his insurance contributions are fully paid up, dare not claim benefit. If he made any such claim he might instantly be drafted to work on fortifications or to serve as an agricultural labourer many miles from his home.

The health of the German worker has suffered badly as the result of food shortage. All kinds of foods were rationed long before the outbreak of war. By August 27, 1939, Germany's rations of meat, sugar and other foods were much the same as those prevailing in Britain in 1918—*after four years of warfare.* The Nazis rationed *in peace-time* a number of foods, such as milk and coffee, which were never rationed in Britain through the

Digitized by Google

whole of the last war. Within a month of war breaking out they even rationed bread—the staple food on which heavy workers fall back when there is a shortage of other foods.

It is not surprising that Dr. Ley, leader of the German Labour Front, told the Nazi Party Congress in 1937 that "half the workers employed in the factories under observation had to receive medical attention."

Nor is it surprising that in 1937, when the number of insured workers rose by 10 per cent., **the number of industrial accidents rose by 25 per cent.**

The German worker has been driven at a pace which often became unbearable even in peace-time. Excessive overtime and speeding-up imposed a terrible strain on his health.

Against all these inflictions he has no redress. The great trade unions, which won the worker such substantial benefits under the Republic, have been smashed by the Nazi masters of Germany. Their former leaders have been thrown into prisons and concentration camps. Even in peace-time there have been signs of unrest among the workers.

When Field-Marshal Göring ordered miners' hours to be increased to 53 a week (April 1st, 1939), the workers instantly rebelled. **In Upper Silesia they tore down posters bearing the Göring order.** At one pit in the Saar territory, only 17 men arrived for the morning shift out of a total of 5,000. **As a result of such tactics there was a serious loss of output.**

The Nazis have officially admitted that they have had to offer miners a 200 per cent. bonus to induce them to make the required effort.

All this happened in peace-time. The burdens of war will put the German workers' morale to an even more severe test.

In Britain, on the other hand, the workers are throwing their whole weight behind the national effort.

While German wages have fallen, British wages have gone up.

According to the Ministry of Labour, the wage rates of British workers were 7 per cent. higher in 1938 than in 1929.

On an average, adult male workers earn about 65*s.* a week. Unlike the German workers, their wages are not subject to heavy deductions by the State. Every adult male worker contributes

Digitized by Google

1*s.* 7*d.* a week towards State insurances against unemployment, illness and accidents, and a pension for himself or his widow and orphans. That is all.

Above all, the British workers are free to organise themselves and to bargain for better conditions. Behind them they have a trade union movement of immense power and influence.

The workers of Britain have watched the fate of the German workers with deep and growing concern. A recent report of the Trades Union Congress stated :

> **" The status of the worker in Germany is rapidly being lowered to that of a convict under sentence of penal servitude."**

The British workers know that a Peace Front victory will bring freedom back to the millions of German workers who are crushed under the heel of Hitler's dictatorship.
They know that the present struggle is their *own* struggle. They know that their own hard-won freedom and security are at stake.

THE PEOPLE'S WILL TO WIN

This war, more than any struggle of the past, will put the spirit of whole peoples to the test.

If that spirit falters, a nation will be on the road to defeat. Victory will go to the nation whose people remain unshaken in the face of the anxieties and hardships of modern war.

What are the things which strengthen a people's resolve to stand firm ?

Here is the answer given by Karl Pintschovius, the German military writer, in a book which had the approval of the highest military authorities in Germany :

" No condition determining the capacity of population to resist is so important as the personal freedom and feeling of duty, fostering each man's individual pride. . . . Complete and perfect respect for the State can only be felt by a man who is inspired by the flame of independence of judgment, freedom, a sense of right and of struggle."

Apply these tests to Nazi Germany.

Digitized by Google

"*Personal freedom*," "*individual pride*," "*independence of judgment*"—these are the very things which Hitler has sought to uproot and destroy.

Hitler has never had the freely expressed support of the majority of the German people. Even at the elections of March, 1933—when Hitler's opponents throughout Germany were subjected to a campaign of terror—the Nazis failed to win a majority in the Reichstag.

Hitler won power by violence—and he has kept power by violence. He has destroyed the democratic institutions of the German Republic. He has crushed all open opposition to the regime. He has suppressed freedom of speech, freedom of religion, freedom of the Press.

Some indication of the terror under which the German people have been living is given by the fact that nearly 200 persons were executed for "high treason" IN PEACE-TIME. This does not include the many political murders committed by the Nazis—such, for example, as the "blood-bath" of June 30, 1934.

What has happened to the millions of Germans—the majority of the nation—who voted against Hitler in 1933? They could not come into the open in peace-time, for open opposition would have meant imprisonment or death. But there are many signs that their enmity to Nazism is still alive.

In 1934 and 1935, for example, when elections for shop-stewards were held in the factories, the workers used their voting papers to demonstrate against the Nazis. In 1936 Hitler called off the elections at the last moment.

The Nazi leaders know that the "underground" opposition is a grave threat in time of war. Listen to the words of Himmler, chief of the Secret Police:

"In the war of the future there will not only be the fronts of the armies on land and the navies at sea and of the air forces in the air, but **there will be a fourth theatre of war inside Germany.**"

Himmler proposes to deal ruthlessly with internal opposition in war-time. More and more people are to be thrown into concentration camps, and a *Volksmeldedienst* ("People's Informa-

Digitized by Google

tion Service ") has already been formed to help the Gestapo to round up enemies of the regime.

Pintschovius, voicing the opinion of high military circles, believes such a policy to be disastrous.

" Men can be butchered," he writes, " but not made to fight."

The German people enjoyed throughout the last war far greater freedom than the Nazis have ever allowed them in peace-time. **In spite of this, the German home front collapsed in 1918.**

This time the German morale is open to grave doubt. Millions of Germans are fighting not for something in which they believe, but because they have been thrust into the war by Hitler.

In pre-war days the Nazis never tired of referring to the " decadence " of the great democracies. They deluded themselves into thinking that our liberties and democratic rights were a sign of weakness, and that we would crumple up before the totalitarian offensive.

They are now discovering their mistake. Democracy and freedom give us incalculable strength—a strength which the fear-ridden Nazi State, for all the ruthlessness of its military machine, can never hope to command. Ours is not the sham unity of an enslaved population silenced by terror, but the real unity of free peoples who control their own destiny.

The Allied peoples, irrespective of party or creed, are fighting for a cause they know to be just, the cause of world civilisation. In war, as in peace, they are free to criticise their governments. This freedom is in itself of great value in getting real grievances put right and in seeing that the war is prosecuted with the utmost efficiency.

If any German dared to raise his voice against Hitler's war policy, or to criticise the rationing scheme or soldiers' allowances, he would immediately be silenced by the Gestapo. Germany is a country where every grievance becomes a festering wound and where the follies and blunders of the Nazi rulers, who live in a narrow world of their own, cannot be called into question by public criticism and discussion.

This war will expose the fatal weaknesses of the Nazi structure; every acute crisis will bring the regime nearer to disaster. The immense staying-power of democracy is the final guarantee of Allied triumph.

PRINTED IN ENGLAND by H & S, Ltd.

Digitized by Google

Have you read these?

How Hitler made the War.

The story of war origins from the Blue Book and Sir Nevile Henderson's Final Report.

3*d.* (3½*d.*)

Documents concerning German-Polish relations. Cmd. 6106.

The British Blue Book on the origins of the War.

1*s.* (1*s.* 3*d.*)

Final Report by the Right Honourable Sir Nevile Henderson, G.C.M.G., on the Circumstances leading to the termination of his mission to Berlin. Cmd. 6115.

A report of the Ambassador's unavailing efforts to maintain peace. The pen-pictures of the leading German diplomats are of especial interest.

3*d.* (3½*d.*)

Papers concerning the treatment of German Nationals in Germany, 1938–39. Cmd. 6120.

Describes the treatment accorded to Jews and persons opposed to the Nazi administration.

3*d.* (3½*d.*)

All prices are net. Those in brackets includes postage.

Obtainable from

HIS MAJESTY'S STATIONERY OFFICE,

LONDON, W.C.2: York House, Kingsway.

EDINBURGH 2: 120, George Street; MANCHESTER 1: 26, York Street;
CARDIFF: 1, St. Andrew's Crescent; BELFAST: 80, Chichester Street;
or through any bookseller.

Digitized by Google

LONDON
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE
To be purchased directly from H.M. STATIONERY OFFICE at the following addresses
York House, Kingsway, London, W.C.2 ; 120 George Street, Edinburgh 2;
26 York Street, Manchester 1; 1 St. Andrew's Crescent, Cardiff;
80 Chichester Street, Belfast;
or through any bookseller

1939

Price 3*d*. net

Digitized by Google

S.O. Code No. 70-999

BOMBER COMMAND CONTINUES

Digitized by Google



Digitized by Google

BOMBER COMMAND CONTINUES

THE AIR MINISTRY ACCOUNT OF THE RISING OFFENSIVE AGAINST GERMANY JULY 1941–JUNE 1942



Issued for the Air Ministry by the Ministry of Information

LONDON: HIS MAJESTY'S STATIONERY OFFICE

Digitized by Google

CONTENTS

		PAGE
1.	T. 2619 Flies Home	3
2.	The Building of a Bomber	6
3.	Giants in the Making: The Stirlings	11
4.	The Story Continued: The Assault on the Sea-Bases	15
5.	"I Chose a Ship . . ."	22
6.	Maschinen Fabrik Augsburg	25
7.	Help to Russia	28
8.	Bombing by Day	33
9.	The Greater Offensive Opens: Bostons Over France	38
10.	Bomber Command Builds Up its Strength	42
11.	The Men on the Ground Prepare	45
12.	The Hammer Falls: One Thousand Bombers Over Cologne	49
13.	The Blow Strikes Home	51

WITH ELEVEN PHOTOGRAPHS, FACING PAGE 28,
AND MAPS IN LINE INSIDE THE COVERS

First published 1942

CROWN COPYRIGHT RESERVED

To be purchased from His Majesty's Stationery Office at: York House, Kingsway, London, W.C.2; 120 George Street, Edinburgh, 2; 39–41 King Street, Manchester, 2; 1 St. Andrew's Crescent, Cardiff; 80 Chichester Street, Belfast; or through any bookseller.

Printed in Great Britain by The Whitefriars Press Ltd., London and Tonbridge
S.O. Code No. 70–406*

Price 7d. net or 20s. for 40 copies

Digitized by Google

1. T. 2619 FLIES HOME

AT 11.30 P.M. on the 14th July, 1941, Wellington aircraft T. 2619, known to all concerned with it as T for Tommy, took off in thick darkness on an operational flight to Germany. It had seven 500-lb. bombs on board and its crew were all sergeants. Saich, who came from Dunmow, was the pilot; Telling, an Epsom man, the second pilot; the navigator was Smitten, a Canadian from Edmonton, Alberta, while the three remaining members were an Englishman, Trott, from Sheffield, and two more Canadians—Hooper from Vancouver, the front gunner, and English from Picton, Nova Scotia, the rear gunner. The target was in the German port of Bremen.

It seemed at first that it would prove hard to find, for the weather was very thick. Just before T for Tommy reached the city, however, it came out of the clouds into a clear sky carved by the sharp blades of searchlights. There was a slight haze over the roof tops 11,000 feet below, but Sergeant Smitten found the target and Sergeant Saich began his bombing run. It was just twenty minutes to two in the morning. One bomb was released, when the wheeling searchlights caught and held T for Tommy in a cone of light which grew in size and intensity as more and more beams concentrated upon the aircraft.

"It was immediately subjected," runs the official report, "to the most intense and accurate light and heavy anti-aircraft fire." Two shells arrived, one bursting just behind and below the rear turret, the other inside the fuselage itself level with the leading edge of the tail plane. The first shell wounded Sergeant English, the rear gunner, in the shoulder and the hand, and cut the hydraulic controls to the turret so that it could no longer be turned except by the slow process of cranking it. Fragments of the other shell riddled the rear part of the fuselage, and set on fire the fabric covering it and the tail fin which is the special characteristic of the Wellington. In a few seconds, therefore, T for Tommy wore the aspect of a flying torch and thus presented the kind of target for which anti-aircraft gunners pray. They seized their opportunity. "The flames," said Sergeant Saich, "seemed to be the signal for every anti-aircraft gun in the target area to give full and uninterrupted attention to us." And all this time, be it remembered, the rear gunner was in the blazing end of the torch.

Saich took violent evasive action and succeeded in throwing the German gunners momentarily off their aim. While he was doing

Digitized by Google

so, Smitten, the navigator, went to the help of English in the rear turret. He made his way down the rocking, shell-torn fuselage till he was brought up short by the fierce fire separating him from the turret. Here for the moment he could go no further. He crawled back a little way, snatched a fire-extinguisher and returned to the fire in the fuselage, which he presently subdued. Above him the fin still flamed. He sprayed it with all that remained of the methyl-bromide in the extinguisher, thrusting it through the hot framework of the fuselage from which the fabric had burnt away. He was at last able to reach the turret.

Sergeant English was still there, but he had made preparations to abandon the aircraft by swinging the turret round into the beam position. A rear gunner bales out by turning his turret until the steel doors, through which he enters and leaves it, face not the interior of the fuselage but the open air to port or starboard. He then opens the doors and throws himself out backwards. This was what Sergeant English was about to do when Sergeant Smitten reached him. He had opened the doors, and now they refused to close. Back went Smitten and returned with a light axe. He leant out through a hole beneath the fin, which he had just saved from burning, the wind of the slip-stream tearing at him, and hacked away at the doors till they fell off. English was then able to rotate his turret by means of the hand gear, and as soon as the gaping hole, where once the doors had been, coincided with the end of the fuselage, he extricated himself and entered the aircraft.

While this was going on astern more trouble broke out forward. The Wellington was hit again and a shell splinter set light to the flares carried in the port wing. These are for use in an emergency, when a forced landing has to be made in darkness. They burned brightly—so brightly that Sergeant Saich thought the port engine was on fire. He promptly turned off its petrol, opened the throttle fully and switched off. Soon, however, the flames died down, for the flares had burnt their way through the fabric of the mainplane and fallen from the aircraft. Realising what had happened, Sergeant Saich turned on the petrol again and restarted the engine. At his orders Sergeant Telling, the second pilot, was crouched beside the main spar behind the wireless cabin pumping all the oil which could be extracted from a riddled auxiliary tank. T for Tommy was still under intense anti-aircraft fire and the shell splinters, one of which wounded him, were described by Telling as "angry hail tearing through the aircraft."

One further misfortune had befallen the Wellington. At the moment when the Germans scored their first hit, the bomb doors

Digitized by Google

were open, for the aircraft was completing its first bombing run-up and one of the bombs had just been released. The damage caused by the anti-aircraft shell was such as to make it impossible either to close the bomb doors or to release the remaining six bombs, since the hydraulic pipes had been punctured and the electrical wiring to the slips had been severed. As well as this, and the damage to the fuselage, the rear turret, the rudder and the fin, there was a large hole knocked by a shell in the starboard wing. It had just missed the petrol tanks.

In this condition T for Tommy was headed for base. The chances of making it did not appear bright. The aircraft with bomb doors open and a heavy load still on board was very hard to control, and Sergeant Saich's task was not made easier by the hole in the wing through which the draught rushed, blanketing the starboard aileron which was for all intents and purposes useless. Nevertheless he held sternly to the homeward course given him by Sergeant Smitten, and at 5.35 a.m. on 15th July T for Tommy crossed the English coast dead on track. Its speed had been much reduced, and the petrol gauges had been registering zero gallons for some two hours out of the four on the return journey from Bremen, over nearly three hundred miles of sea. With dry land beneath him once more Sergeant Saich determined to make a forced landing, for he thought that at any moment the engines would stop for lack of fuel.

The word is "flew"

The sky was now "pale as water before dawn," and he picked out a barley field where it seemed to him that a successful landing might be made. In the half light he did not see the obstruction poles set up in the field to hinder an airborne invasion. He set about making his perilous descent. The flaps would not work, and when he came to pump the undercarriage down with the emergency hydraulic hand pump he found that, owing to loss of oil, it would only push the tail wheel and one of the main wheels into their positions. T for Tommy came in to land, lop-sided a little to take full advantage of the one sound wheel. On touching down, the aircraft swung round, but its motion was violently arrested by an obstruction pole. It shuddered and then came abruptly to rest on its belly with its back broken. Save for many bruises none of the crew sustained further hurt. T for Tommy was little more than a wreck. It had flown to that East Anglian barley field with a huge hole in its starboard wing, with uncounted smaller holes in its fuselage, with nine feet of fabric burnt entirely away forward from the

Digitized by Google

rear turret, with half the fin and half the rudder in the same condition. Yet it flew home. The operative word is "flew."

The airframe number of the Wellington was T. 2619, the engine numbers—each engine of an aircraft has two:

Port Engine:	Maker's Number 8816: R.A.F. Number 185326.
Starboard Engine:	Maker's Number 8122. R.A.F. Number 161206.

Sergeant Saich, the pilot, and Sergeant Smitten, the navigator, were awarded the Distinguished Flying Medal.

This story of Wellington, T for Tommy, is not unique. If it were, much of the point in telling it could not be made, for its successful homing would have been a striking exception to an unhappy rule. It is because very many other aircraft, not Wellingtons only, but Blenheims, Hampdens, Whitleys, Stirlings, Halifaxes, Manchesters and Lancasters have endured similar punishment and lived to fly again, that this record of one such perilous but successful return is here set down. It is a not unfitting prelude to the story of Bomber Command from the middle of July 1941, the point at which the tale of its earlier doings ended,* to the earlier stages of its 1942 offensive now in full swing.

2. THE BUILDING OF A BOMBER

BEFORE TELLING that story, it is as well to enquire how such an offensive has been made possible. There are many reasons. The Home and Empire Air Training Schemes, which are providing thousands of trained crews, is one: the standard of efficiency of those crews when they join their comrades, who are already operational veterans, is another. A third is the construction of the aircraft, the way in which they are designed and built, the way in which they are serviced and maintained. This last reason deserves to be examined more closely. However well trained and gallant the pilots and crews, without aircraft of excellent workmanship to fly and without skilled ground staff able to keep those aircraft in excellent

* *Bomber Command*, September 1939–July 1941. H.M.S.O.

Digitized by Google

condition, their task would be impossible. How then, is a bomber built and how is it maintained in action?

A full answer to this question cannot be given within the limits of a contemporary pamphlet. Moreover, much of the process of manufacture is secret. The general principles, however, are clearly defined, and can be set down.

The basic principle is akin to that taught by Napoleon and practised by him in the conduct of war. Disperse to march; concentrate to fight: or, in terms of production, disperse to manufacture; concentrate to build. Thus the various component parts of a bomber are made by a number of sub-factories, and by sub-contractors. The partly or completely finished parts are sent to Assembly Factories where they are put together to form the finished aircraft. Sub or Dispersal Factories, as they are called, and sub-contractors, feed and are fed by the main Assembly Plant in the hands of a central control, which plans the whole operation or rather series of operations from beginning to end. It is the central control which allocates their tasks to the various sub-factories and sub-contractors, the making of undercarriages to one, of tail planes to another, of engine mountings to a third, and so on. Between the main and sub-factories and contractors there is a constant flow of raw material one way and of completed or semi-completed parts the other.

From store into aircraft: the assembly shop

The Main Assembly and the sub-plants have many details in common, of which one is of outstanding importance. To make or assemble a part, some kind of "jig" is nearly always used. A "jig" is a fixture which varies from a simple piece of shaped wood or metal to a complicated structure of accurately positioned steel members. Jigs control the manufacture of component parts so that they may be identical and interchangeable. All jigs, and all the detail tools, jig fixtures and machine tools for giving special treatment to particular materials used in the aircraft, are duplicated and dispersed so that, if a German bomb destroys one, there will be another available either in the factory itself or elsewhere. In other words, the eggs are not all in one basket; and machine tools and jigs are very precious eggs indeed.

So much for the general lay-out. Now come to an Assembly Factory. Since it is impossible to go to every one, let us choose two which may be regarded as typical of the rest. The first is engaged in making Wellingtons, the second Stirlings. The Wellington

Digitized by Google

is one of the oldest types of bomber in service. The Stirling was the first four-engined bomber to become operational.

Leaving the manager's office you cross a corridor, pass through a door and find yourself upon a small platform or gallery overlooking the floor of the Assembly Hall. In the daylight, pouring in from shuttered windows in the roof, it seems to be not very high but its extent is enormous. Yet its size is not immediately apparent, for the vast floor-space is cut up by numerous partitions—blast-baffle walls of naked brick, well buttressed and enclosing a series of roofless boxes, for they do not extend upwards so far as to reach the ceiling. If they did they would interfere with the electric cranes pursuing their path "in strange geometrical hinges" along steel guides which are part of the roof structure. They are stretched, a severe, symmetrical web, over the whole ceiling, so that the burden borne by any crane —a 14-cylinder double-bank, air-cooled, radial Hercules engine (Mark III), or the outer section of a wing, or whatever it is—may be delivered exactly where it is needed at exactly the chosen moment.

Looking down the hall to the right-hand side, we see the ordered stacks of stores, ranging from raw materials which have been sent to the main factory for inspection and distribution to the sub-factories, to the finished parts. These are kept in main stores where they remain in bulk, sorted and graded, till transferred as required to sub-stores from which they are handed out to the workers. Since the sub-stores are situated opposite the stage in the Assembly Line where the equipment they provide is wanted, it goes straight from the store into the aircraft.

The Wellington is built, or rather put together, in seven stages, along three parallel assembly lines occupying all the rest of the factory to the left of the stores and the wing shops. Come down to the floor and move with a Wellington from the point at which it is born, seemingly from a disordered mass of duralumin trellis work, to the far end of the hall where it is pushed through the great doors and stands outside, a finished bomber, with engines turning over ready for the test pilot to take it into the air from the aerodrome just beyond.

First you will see a pile of geodetic panels, for, as most people are aware, all the surfaces of the Wellington consist of trellis framework over which fabric of fine tested linen is stretched. The panels are being sorted according to the position they occupy in the fuselage. This work—indeed, a very great deal of all the work that is done in the hall—is being performed by women. They wear trousers and buff-coloured overalls. Some have handkerchiefs or caps on their heads; many are bare-headed, as there is no rotating machinery

Digitized by Google

with which they might come in contact. You will pass on rapidly to stage two, for here the Wellington is beginning to take shape and form. On special assembly jigs the sorted pieces of the fuselage are being fastened together. Here again are women standing on the platforms of the jig or inside the half-formed fuselage, looking like inhabitants of Lilliput drafted to work in a factory of Brobdingnag, or like children very busy with a new and gigantic Meccano set.

The Wellington now receives a number of inspection cards, on which is recorded each stage of the manufacture when it has been satisfactorily completed. The fuselage cannot pass on from one stage to the next until an inspector has made his check and signed on the card. These inspectors are to be seen in all parts of the factory. They belong to the Directorate of Aircraft Inspection of the Ministry of Aircraft Production or to the firm of Vickers Armstrong, who make the Wellingtons. The inspectors of the firm wear green overalls. A few wear purple. These are known as "progress men" (or women), and "chasers," whose job it is to watch over the smooth and ordered movement of parts in the whole manufacturing process.

The fuselage, now pinned together, has reached stage three; next, it begins to receive some of the instruments and equipment parts which the Wellington carries. The first that you will notice is the control column rising up in the forward part of the fuselage, in front of the, as yet non-existent, pilot's seat. Here, too, women are attaching strips of wood to the fuselage at different points to retain the fabric covering in streamline form. On either side the root attachments are added from which the wings will shortly spring, and fore and aft are bolted the rings which will hold the turrets.

Two and a quarter miles of cable

At stage four the wiring of the aircraft begins. Two and a quarter miles of electric cable have to be inserted to carry the current operating all the electrical gear, such as the bomb release and fusing apparatus, the internal, navigational and signal lighting and the gear for charging the accumulators which supply the current for engine starting and wireless. At this stage, too, the flying controls operating the ailerons, elevators and rudder are inserted. The cabin of the Wellington is now beginning to assume its final form, for it is being covered with sound-proof material. At stage five the fabric is being put on to the gleaming skeleton. The pieces have been cut and shaped by hand on grooved tables in the sewing shop. They are made of fine linen and attached to the fuselage by fabric holders,

Digitized by Google

which are wooden strips each containing 144 screws. The preliminary holes for the insertion of each screw have been made by women seated at the side of the production line. A woman can drill as many as 40 holders in one shift. In covering the fuselage with fabric, it is essential that the seams should run the right way and that the screws for holding the covering should be properly inserted. Any mistakes made are written in chalk by the inspector on the fabric and subsequently set right.

Now the fuselage is ready to take the inner wing—that is, that part of the wing between it and the engine nacelles. This is carried out at stage six, and here also small electric mobile cranes stand fore and aft of the fuselage with gun turrets like huge, luminous eggs swinging from their chains. And so to stage seven, where the outer wings, the undercarriage, the bomb doors and finally, the tail unit are all added to the now complete fuselage. The wings themselves have been made in the wing shop beyond the stores. The final fabric sewing is carried out with curved needles, eight women to a wing, and the process takes about thirty woman-hours.

The wing is then passed to the doping shop where, like the fabric of the fuselage, it receives four coats of dope. This dope protects the fabric against weather and also causes it to shrink, thus tightening the skin of the Wellington. The workers in the dope shop live in an atmosphere strongly redolent of pear drops. They receive a pint of milk a day, as a prophylactic against the effect of the dope fumes which, although harmless to the health with the 12 changes of air per hour provided, are inclined to upset the digestion of those unaccustomed to them.

The Wellington is now almost ready to fly. Before the wings have been attached to the fuselage, the self-sealing petrol tanks have been slipped in, and as soon as the undercarriage has been bolted into place it is tested by attaching pipe lines from a mobile trolley with an electrically driven hydraulic pump. Then the overhead cranes, bearing the Hercules engine installations, lower their burden to each nacelle where they are bolted to their fireproof bulkhead. It must be borne in mind that any mechanism put into the Wellington has been tested in the shops. Thus, for example, in the Bomb Rack Section the beams are wired and tested before being attached below the fuselage, and so with every other part. In the Electrical Section all the electrical gear is made up and tested; in the Pipe Shop all the hydraulic and other pipes, and in the Test House all petrol accessories, hydraulic valves and pumps.

Once off the assembly lines the now almost completed Wellington is pushed through the great doors across a space and into a

Digitized by Google

smaller hall, where it receives its guns, its wireless equipment, its fire extinguishers and other operational gear. Then out it comes again and is at once flown off the ground for twenty minutes or half an hour by a test pilot. Everything which can be tested in flight is tested, special attention being paid to the intercommunication system whereby the members of the crew talk to one another, the bomb release gear and, of course, the controls and engine instruments. On landing, final adjustments are made and then the Wellington is handed over to a pilot of the Air Transport Auxiliary, to be flown to a central pool or perhaps direct to a bomber station.

3. GIANTS IN THE MAKING: THE STIRLINGS

THE METHOD of producing Stirlings, and for that matter Halifaxes, Lancasters, and all other heavy bombers, is much the same as that used to produce Wellingtons; but a Stirling assembly plant at first sight offers a marked contrast. There is much more noise, more artificial light, and the hall itself is even larger. Look down on it as you looked on the Wellington hall—from a balcony. It is so large that its further end is a blur under the fluorescent lighting which turns the faces of the workers green and their lips mauve. The noise of the machinery, too, produced mostly by the electrically or hydraulically driven tools, is intermittent but loud—loud enough to make it necessary to speak at the top of the voice and sometimes to shout.

Here everything seems on a larger scale. The fuselages, in their long rows, supported on bogies moving on a track which runs the whole length of the hall, look not unlike the bodies of Green Line 'buses. The wings, viewed from the end which will be attached to the fuselage, resemble dark, strutted tunnels into which a man may crawl with ease. Only the turrets appear the same size as those which you have already seen.

This, like the Wellington factory, was one of the many shadow factories before September 1939. Since then the shadow has become a reality. The layout is much the same in both factories; though, since the Stirling is a larger aircraft with four engines, weighing more than thirty tons, and containing more than 60,000 separate parts, the work of constructing and assembling takes longer.

Digitized by Google

In order to ensure the maximum output and at the same time to avoid building complicated and costly jigs for which there are neither machine tools nor skilled labour available, large numbers of small, simple, easily made jigs are used, each jig or each group of jigs serving the main assembly section opposite which it is placed. The wide use of these sub-assembly jigs, as they are called, enables a new recruit in the factory to begin at once on an easy piece of work and thus to become proficient in a much shorter time than would be possible if the whole unit, fuselage or wing were built on a major jig. It is unnecessary and costly to make some dies and tools of steel in order to manufacture parts such as pipes and sheets of various shapes, whose material is thin-gauge light alloy. Many of these jigs and dies are therefore made of wood. Modifications in them can be made without delay.

More complicated machines, such as the big cutters for shaping the spars, or the presses and boring machines, are so built that one operation is performed by each, and so placed that the operations take place one after another in a certain order. It is impossible to omit one operation, for a semi-finished part would not fit the next machine. Thus error is reduced to a minimum.

The moving line of bombers

Large though it be, the factory is not large enough to make and assemble all the parts which make up a Stirling. As with the Wellington, many of these parts are manufactured elsewhere and sent in a finished or semi-finished condition to the Assembly Plant. Line production has been instituted and is indeed the rule in all aircraft factories. With Stirlings, both wings and fuselage are produced in lines.

Before joining the line, the wing receives its first form on the building jig, where the leading and trailing edges and the engine nacelles are assembled. This wing shell is then carried by an overhead crane and placed on a specially constructed bogey running along a track which is the main assembly line and is parallel to a similar line on which the fuselages are being constructed. The wing then progresses stage by stage along the line till it reaches its fuselage. First the pipes and tanks are fitted into it, then the controls for the ailerons, then the landing and other lights, then the electrical equipment, then the engine controls. All the pipes in the various systems are pressure-tested after assembly.

While the wings are thus being built, the construction of the fuselage is being carried out in much the same manner, though it

Digitized by Google

is taken along the assembly line in sectional form. At each stage more and more items of equipment are incorporated into it, and finally the various sections of the fuselage—the nose, the forebody, the aftbody and the tail—are joined together. The turrets are then mounted, being dropped into position from overhead gantries. Then the testing gear is brought into operation, and everything in the fuselage and in the turrets is tested to make sure that it is in proper working order from the start. This testing at an early stage reduces the number of faults—or rather leads to their early discovery—and thus makes it possible for a test flight to be carried out immediately the building process is ended. Before the wing is attached to the fuselage, complete tests are made of all electrical circuits, fuel tanks, control cables, etc.

As with the Wellington, a schedule is attached to each main portion of the Stirling as it grows beneath the hands of the workers. This "Master Schedule" is a list of all parts and is added to as each part is inserted in the fuselage or wing. Thus at any moment the inspector or one of the supervisors, of whom there are three in the factory—one for the machine shops, another for the assembly lines, and a third for the press and detail shops—can see by a glance at the schedule whether the aircraft or details are progressing at the proper rhythm of speed through any particular stage. All stores are kept at the side of the main assembly tracks and the installations they contain are, as with the Wellingtons, taken from them and inserted in the aircraft while it moves slowly past their position in the hall.

After the fuselage and wings have been completed, the aircraft comes out of the main hall, and then passes into an adjacent block where it is painted, camouflaged and finally adjusted for flight. Then, black beneath and mottled above, it rolls slowly on to the tarmac of the aerodrome. There it is fuelled and taken into the air. When the test flight is over, the compass is swung, any adjustments which may have proved necessary are made, and it is then taken over by a Ferry Pilot. Stirlings thus built have been in action within forty-eight hours of leaving the works, and on one occasion one of them was over a target in Germany only twelve hours from the moment it touched down after its test flight.

In this general account of the assembling of a heavy bomber there has been more than one reference to the part played by women. It is of great importance. Skilled labour, even in peace time, is very scarce compared with unskilled, and so the two must be mingled in order to produce quick and accurate results. In aircraft factories, therefore, the skilled workers—nearly all of them men—have been

Digitized by Google

given work which only they can do. They are the nucleus of each factory, the cadres of the great industrial army providing the Royal Air Force with the aircraft it needs for battle and for victory. The great majority of the army are dispersed throughout the factories and called semi-skilled, but in fact become exceptionally skilful in their own particular job. The larger proportion of these workers, women for the most part, have learned their job in factories. After a short period of instruction in the use of basic tools, the new worker is very soon engaged on the simpler production jobs and has the satisfaction of making something which is to be used in the aircraft, even if it is only an anchor nut assembly or riveting stiffeners to the sheets which cover the fuselage and wings, and she soon attains speed and dexterity. In addition to those who have learned their jobs in the factories, tens of thousands have received an intensive and progressive course of training in Government Training Centres and Technical Colleges, where they are rapidly trained for work requiring a considerable degree of skill. The training is given in close co-operation with industry and generally includes in its later stages suitable production jobs, so that the trained workers can go straight on to the job with a thorough grounding in their new occupation and with practical experience of the actual work they will be doing in the factory.

Looking after these thousands of women are a number of women supervisors who have reached this position by promotion from below. They have been through the "shops." They know every detail, and it is their task not only to teach the workers in their charge but to discover what particular piece of work each of them is best capable of performing. In many factories the supervisors submit a return each week in which they make recommendations for the promotion or "upgrading" of anyone who shews herself capable of doing a more skilled, and consequently a more highly paid job. This system of upgrading has proved very successful, and women as a whole show great keenness to move upwards till they reach a stage at which they can work on the fuselage or the main wing of a bomber. A use can be found for every man and woman in the factory, and they can be moved up and down according to their proficiency, the less skilful being given the simpler forms of work, the more intelligent the more complicated.

Keep the green light burning

The motto for aircraft factories might well be that beloved of Erasmus, *Festina lente.* In their wide, echoing halls there is no

Digitized by Google

seeming haste and, equally, no seeming pause. The work flows steadily on. A tall girl in a green overall writing in chalk on the discoloured side of a half-finished fuselage; an old woman, who lost her teeth in the year the Prime Minister escaped from the Boers, leading a girl of seventeen to her first day's work in the Wing Shop —she had been in the mineral water trade—"From ginger beer to Wellingtons," as the old woman said; the vapour rising from the anodising tanks in which lie strips of metal seemingly distorted by the movement of the chemical; the back view of two men thrusting into the hollow of a wing self-sealing tanks that look like an enlarged edition of those smart suitcases in purple linen covers that used to be seen in the corridors of the Golden Arrow; the shape of a huge wing swaying from the ends of half-seen chains and dripping tentacles of insulated wire and silvered cable; two small feet at the end of trousered legs swinging from the bottom of a half-finished fuselage; an ex-mannequin wearing her overalls with an air, holding a stuttering riveting tool to a burnished sheet of thin metal; an empty surgery with bottles on a shelf and rolls of bandages beneath them; a barber with splendid moustaches at work with his scissors in his haircutting booth at the end of the Assembly Line; the test pilot waiting by the finished aircraft for the last workman to climb out of it—the work goes on.

Inside, above the main entrance of more than one factory, is a large sign with the words "Target for the Month" written along the top of two pictures of Adolf Hitler. In one he is laughing and satisfied. That is when the red light shines to give warning that production is below the mark shown on the illuminated scale below. In the other he is morose and cast down, when the green light shows that production is above schedule.

It is the aim of all to keep the green light burning.

4. THE STORY CONTINUED: THE ASSAULT ON THE SEA-BASES

WITH AIRCRAFT built in this manner, Bomber Command is continuing its attack on the enemy which began on 4th September, 1939. For a year now the strategic policy governing it has been dominated by an event which occurred on 22nd June, 1941. On that day Hitler invaded Russia. The campaign which then opened

Digitized by Google

soon assumed gigantic proportions, and as the dusty Russian summer gave place to a dustier autumn, which in turn yielded to the implacable cold of a Russian winter, it became evident that the Germans would not be able to repeat their long series of swift successes, of which Poland has been the first and Greece the last victim. The resistance of the Russians was, from the beginning, so tenacious and effective that the immense quantity of German men and material accumulated for the campaign presently proved insufficient. To meet the needs of the Eastern front, an ever-increasing number of men, guns, tanks and aircraft has had to be taken away from other theatres of war by the German High Command, as it becomes more and more obvious that upon the issue of the Russian conflict Hitler's chances of swift victory depend.

Within a few hours of the German attack on the Soviet Union the Prime Minister of this country promised our fullest support. Bomber Command has a very large share in the fulfilment of that pledge. To do so with effect has been, and is, its main preoccupation; another is the part it must play in an older struggle, the Battle of the Atlantic. In the pursuit of this dual object two phases may be distinguished. The first began towards the end of June 1941 and lasted well into February of this year, when it merged into the second, now in progress.

It will be convenient, however, to deal first with those operations of Bomber Command which, directly or indirectly, are being carried out in order to help the Royal Navy, the Merchant Navy and Coastal Command in their long struggle for victory on the high seas. That help has been of importance, for it has been necessary over certain periods to devote as much as 40 per cent of our bomber effort to targets such as submarine bases and building yards, capital ships, and factories where sea reconnaissance aircraft, mostly the Focke-Wulf Kurier, are under construction. All these targets are directly connected with the Battle of the Atlantic.

The battering of Brest

Chief in importance comes Brest, where for so long the battle cruisers "Scharnhorst" and "Gneisenau" and the eight-inch gun cruiser "Prinz Eugen" found shelter. It is well, perhaps, to remember that these vessels, which are a considerable proportion of the striking power of the German Fleet, remained inactive in that port, the two battle cruisers from the end of March, the eight-inch gun cruiser from the beginning of June, 1941 to the night of 11th/12th February, 1942, a period of nearly ten and a half and eight and

Digitized by Google

a half months respectively, and that when they did put to sea, they went, not out into the Atlantic to prey upon our shipping, but home to Germany. Both the "Scharnhorst" and the "Gneisenau" eventually reached Kiel, where the latter appears to have suffered further damage from air attacks, as the result of which she has been removed to the Baltic port of Gdynia for repairs. The credit for keeping these warships in Brest for so long and so critical a period of the war must go to Bomber Command. A high proportion of its strength was used against that very well defended seaport, and many hundreds of tons of bombs—a hundred and seventy-three in one night in December 1941—were dropped.

"Brest was heavily attacked last night by a large force of aircraft of Bomber Command. A great weight of bombs was dropped in the dock area and bursts were seen to straddle the dry docks in which the battle cruisers 'Scharnhorst' and 'Gneisenau' are lying." . . . "Attacks were also made on the docks at Brest." . . . "Other forces attacked the naval base at Brest." . . . "The German naval bases at Brest and St. Nazaire were strongly attacked last night." . . . "The attack on Brest was continued last night by a strong force of aircraft of Bomber Command. Many fires were left burning." . . . "Bomber Command again attacked the docks at Brest last night. . . ." These laconic phrases of the Air Ministry communiques of last autumn and winter record a tale of sustained effort to keep the German ships shut up in harbour if it were not possible to sink them.

The attacks were made mostly, but not always, by night. After an attack by a hundred and one aircraft on the night of 17th/18th December, 1941, for example, a strong force of heavy bombers, Stirlings, Halifaxes and Manchesters, went to Brest "in brilliant winter sunlight." They were accompanied by a fighter escort which had many encounters with Me. 109s. The Stirlings attacked first, followed by the Halifaxes with the Manchesters close behind. The attack was timed to begin at half-past twelve and to last no more than half an hour. The leader of the Stirlings saw Brest afar off, "looking very peaceful in the strong light. But when we were about four miles away, the whole sky was suddenly filled with shell bursts. We flew straight in . . . I have never seen such formation flying under fire. They were an unbroken line." One of them was "MacRobert's Reply" named after two sons of Lady MacRobert who have been killed in action with the Royal Air Force. She contributed £25,000 towards its cost. It was attacked five times and shot down one of its attackers as it arrived over the target.

Digitized by Google

The formation flying of the Halifaxes was so good that they beat off all attacks by enemy fighters, though one of them had to land in the sea on the way home. A shell had knocked out an engine which caused the Halifax to lose speed and therefore formation. Fighters destroyed two more of its engines and it could not remain airborne. Its navigator, Sergeant Corke, navigated the dinghy with the aid of a tiny compass for five hours, and succeeded in keeping it on the track on which the Halifax had been flying when it came down in the sea. The Air-Sea Rescue craft thus found the dinghy without great difficulty.

Photographs shewed that no bombs fell in the town of Brest or in the commercial port. Two landed between the "Gneisenau" and "Scharnhorst" and the sides of the dry docks in which they lay. Other bombs damaged the gates of the docks themselves.

Running fight in the channel

Brest was attacked thirty-four times by Bomber Command between 1st August, 1941, and 12th February, 1942. On that day news arrived at Bomber Command Headquarters, soon after 11 a.m., that the "Scharnhorst," the "Gneisenau" and the "Prinz Eugen," accompanied by a strong escort of destroyers, R and E boats, fighter and bomber aircraft, were moving up the Channel. The German naval force were obviously making for their home ports. Bomber Command at once took the necessary steps to join with the Royal Navy and with Fighter and Coastal Commands in an attempt to sink or cripple the enemy. Its task was difficult, and in the event was only in part fulfilled.

The Germans had chosen their moment with care and had been well served by their meteorological services; for the weather, from the point of view of a bomber force whose target was swiftly moving ships, was vile. For almost all the time during which they were within range, cloud varying from eight to ten-tenths lay over the Channel and the entrance to the North Sea.

These weather conditions created two problems, one very difficult, the other almost impossible to solve. First, the German ships had to be found. The visibility was never more than 2,000 yards, often half that distance, and for much of the time was to all intents and purposes nil. Even in the most favourable circumstances, therefore, the bomb aimer of an aircraft flying at 200 miles an hour had at most 20 seconds in which to find the ships and drop his bombs. But this was not all. The clouds were not only thick and wide-spread; they hung low, in places 2,000 feet above the surface in

Digitized by Google

others only 700. Armour-piercing bombs dropped from either of those heights have not enough velocity to pierce the hulls of warships. They could not be used. Even if the ships were hit, therefore, there was no chance that they would be sunk. At best enough damage might be done to cause them to reduce speed.

Despite these known handicaps a large force of bombers set out to the attack. Some of them had returned only a few hours before from a night attack on Mannheim. A high proportion reached the area through which the ships were stealing, but very few saw them. A number succeeded in dropping mines on the forecast track of the ships. The attacks were kept up from a little before 3.0 in the afternoon to a quarter-past six in the evening, by which time it was almost dark. Icing, at times very severe, rain and hail were met with by most of the crews.

"We had orders to bomb from 10,000 feet if we could find a gap in the clouds," said the pilot of a Blenheim, "but we could find no gap and came down to 800 feet where the cloud was ragged. There we zig-zagged for some time over the presumed track of the ships and presently saw a destroyer for a fleeting moment." The Blenheim was attacked by an Me. 109 and sought refuge in the clouds, coming out again to see three more destroyers and three more Me. 109s. Back into cloud again it went and ice immediately began to form on the port engine, which stopped. The pilot dived steeply to 400 feet, came out into clear air, and saw either the "Scharnhorst" or the "Gneisenau" immediately beneath him. He was received with heavy fire, but his port engine started again and he got away. "One thing I am sure of," he said on his return, "No dive bomber could have done anything in those weather conditions," a view certainly shared by all who took part in the operation.

We lost in all fifteen bombers, some very probably owing to collision in the thick murk. That number would probably have been greater if the skies had been clear, for then the German fighters would have been able to make more interceptions. The German ships did not pass through unscathed, however. "In addition to the damage sustained . . . by torpedo and bombing attacks on February 12th," runs the joint Admiralty and Air Ministry communique of May 3rd, "it is probable that further damage was caused by mines laid by our aircraft." There, for the present, the matter must rest.

Attacks on Brest were by no means the only contribution made by Bomber Command to the Battle of the Atlantic. Other French ports in the hands of the enemy, and some in Belgium, Holland and

Digitized by Google

Norway sustained its assaults. In this period Le Havre and, Boulogne were attacked 18 times, Dunkirk 15, Cherbourg 12, St. Nazaire 4, Calais and Lorient twice and Bordeaux once, while of the Belgian and Dutch ports Ostende was attacked 13 times, Antwerp twice and Rotterdam 5 times. Some of these ports, notably St. Nazaire and Lorient, are submarine bases; others are the haunt of E and R boats and of armed raiders, or places at which coastwise convoys call.

Pinning down the German Navy

The heaviest attacks, however, were directed at naval bases in Germany itself. Emden, Hamburg, Kiel, Bremen and Wilhelmshaven were bombed twenty, twelve, ten and the two last seven times respectively. The importance of these bases needs no emphasis. It is there that the surface ships, U boats and aircraft engaged in the Battle of the Atlantic are built and repaired. They are all heavily defended. Of the many adventures which befell the crews who attacked them during last winter here are two.

On the night of 10th/11th January 1942, a Wellington was hit over Wilhelmshaven and a flare it carried was set alight. This in turn ignited the wooden catwalk that runs down the length of the fuselage and the fabric covering its geodetic framework. The fumes thus generated were such that the wireless operator was unable to get close enough to the seat of the fire to put it out. Dense quantities of smoke blotted out the control board. The Wellington, caught in the beams of thirty-five searchlights—they were counted by the rear gunner of another aircraft close by—began rapidly to lose height. Its captain gave the order to abandon aircraft. "Through the cloud of smoke somebody grabbed my hand. I heard the crew leaving. I thought it would soon be time for me to go too. I got up to see that everybody was out. The smoke seemed a little better. In the fuselage I saw my second pilot at work on the fire. He was wearing his portable oxygen set, for he could not breathe properly in the fumes." The second pilot eventually put out the fire with an extinguisher and his gloved hands. The pilot went back to his seat and got the Wellington under control again. He and his one companion brought it back in safety.

The window that would not shut

On 21st January a Hampden, one of several, bombed Emden. The trip was uneventful save for the cold. The heating system failed soon after the take-off but the pilot did not turn back. Here

Digitized by Google

is what happened to the rear gunner. He had brought with him a few extra incendiaries intending to open the window of the "scuttle" and drop them. The scuttle is made of perspex and is curved. In order to open it a catch must be pulled and the window pushed up.

"Well, I got it open all right," said the rear gunner. "That brought a blast of air at 65 degrees of frost in at me. Then I had to fuse my incendiaries. It's rather a niggling little job—pulling out a pin and getting your fingers into a little wire loop. My big outside gloves had to come off, of course. But I pulled the thin ones off too, to try and get the job done quickly.

"This was a mistake. The moment my fingers touched the metal they went dead and powerless. It's a nasty sensation. I couldn't even begin to fuse those bombs. Then I realised I couldn't possibly work my guns either. I guessed the wireless operator was in the same boat—and he was, too. So I knew that if a night fighter came for us we were helpless.

"There was nothing to be done about it, though. So I tried to get my gloves on again, but I found I couldn't. I must say I thought that meant that my hands would be gone. Then I realised that the perspex was still open: that was why I was freezing up so quickly. I began to fumble with the catch to get it shut.

"For a long time I couldn't get any kind of grip on it. Then I knelt on my guns to get more purchase. The movement must have stirred me up enough to realise that if I didn't get the perspex shut I was done for: no one could stand it open for hours. I got one of my bent fingers round the catch and it came out. Now the curved perspex should push down shut. I heaved at it. It stuck. I heaved again. It was frozen fast. But the exertion was waking me up. I went on fighting it.

"You know how maddening it is when some gadget won't work. My life may have depended on my making this one work. I just went on heaving: then I tried to jerk it. Nothing happened. I couldn't think of anything else to do. I just went on at it. Then suddenly it shut."

Considerable damage in the German Naval Bases has been inflicted. Two examples must suffice. By the end of March 1942, Kiel had suffered appreciably. Two long sheds, probably the Torpedo and Gun Stores in the Deutsche Werke where submarines are built, had been destroyed. The jetty to the Northern Floating Dock had been broken, and was unusable for some time. A great deal of repair work has been observed in the Germania Works where the mould loft, one of the most inflammable parts of a shipyard, was heavily damaged, as also were buildings near the Naval

Digitized by Google

Academy and the Blücher Jetty. There is much damage to be seen in the town itself, notably in the Hagenuk Works which are important producers of torpedo and mine components. In one raid late in 1941 the city's water mains were badly damaged. By the end of June 1942, Emden's shipbuilding yard had been completely gutted, a number of submarines on the stocks destroyed, and a wide area of the port desolated.

5. "I CHOSE A SHIP . . ."

IT WILL BE remembered that at the beginning of 1941 daylight attacks were opened against enemy shipping and were entrusted to Blenheims. This form of assault was continued in the summer and early autumn of 1941. The Blenheims sought enemy convoys, or much more rarely single ships, moving up and down the coasts of Holland, Belgium and France, which were divided for the purpose of attack into a number of "beats." It was the practice of the Blenheims, once the whereabouts of an enemy convoy had been discovered or suspected, to fly for a certain time along one or more of these beats and to attack immediately the enemy was sighted. This was often a matter of some difficulty, for cloudy weather with moderate or poor visibility was essential since the Blenheims had no fighter escort. They flew low over the water, and on sighting the convoy each picked a target and delivered its attack from mast height, the bombs thus swinging almost horizontally into the ship's quarter. They then skidded round—a sharp turn would have exposed the very vulnerable belly of the aircraft to the fire of the ship's gunners—and made for home. These attacks were pursued with vigour and determination,

"It was our first show," reports Flight Sergeant Shackleton, who, with Flight Sergeant Eyres and Sergeant Kennedy, went out early in September 1941 with the leader of his squadron, Wing Commander Jenkins, D.S.O., D.F.C., to seek a large enemy merchant ship off the coast of France. "The Wing Commander took the middle beat and we were on his left. We didn't see the big ship, but after turning to port and flying the prescribed length of time along our beat we saw a convoy just on the horizon. At that moment, too, we saw a big ship, probably the one we were after, but as we were in the wrong position to attack her we went on for the convoy.

Digitized by Google

"I chose a ship of, I judged, between 3,000 and 4,000 tons. It had a flak ship to starboard. I cracked on full boost and went for the merchant ship. Both it and the flak ship opened up. The air in front became full of black puffs with red sparks crossing them. That was tracer and it all looked as though it was going straight towards us, only to turn away at the last moment and hit the water, where the splashes reminded me of those made by children when they throw handfuls of pebbles into a pond. Flak looks like that when you're coming in low. It was my first attack on a ship and I pulled up a bit late and only just missed the mast. We then found we were rushing over a destroyer and that an Me. 109 was 400 feet above us. He fired a few bursts and then went off. The Wing Commander must have got his ship, because we saw a big one with its decks awash just after our attack."

A month later the same crew, in the company of two other Blenheims, found a convoy 10 miles off the Frisian coast. The attack was made from the direction of the shore, and the Blenheims, flying very low, got well into the convoy so that the ships ran great risk, if they opened fire, of hitting each other. They did not do so until the attackers were clear of them. Two of the Blenheims made off after dropping their bombs and the third dodged in and out, "weaving among the ships" till its pilot found a gap and slipped through.

Occasionally Stirlings took a hand. In the afternoon of 24th November two of them sighted seven German ships off the island of Borkum. While attacking them, they were themselves attacked by eight Me. 109s. They accounted for three of the enemy aircraft in an engagement lasting 25 minutes. One of the Stirlings was badly damaged by flak before the action, and fought it with bomb doors hanging open and a starboard engine dead. Soon after, the port outer engine stopped, but the Stirling got back on the two remaining.

Such attacks are typical of the work performed by the Bomber Command against enemy shipping in 1941.

Unseen and deadly weapons

Before passing on to the second and more intensive phase, the activities of the Command in the important work of laying mines in enemy waters must be mentioned. Up to the beginning of 1942, mines had been laid almost entirely by Hampdens; but other and heavier types have now been adapted to carry these unseen and deadly weapons. The heavy bomber has a considerable advantage

Digitized by Google

over the Hampden because it can lay a larger number of mines in one operation. Mine-laying on a large scale is being carried out simultaneously at vital points from as far south as Bordeaux, along the coasts of France, Belgium, Holland and Germany, right round to Danzig in the Baltic. From 1st January 1942, up to the end of May, as many mines were laid by Bomber Command as had been laid from April 1940 to December 31st, 1941. The sowing of much frequented enemy waters with sea mines dropped from aircraft is one of the quietest and also one of the most effective of the operations of Bomber Command. Here is the account of an eye-witness.

"You set off in the dusk, climb through a murky sky over the flat East coast of England. You climb through cloud; on the top is a brighter, clearer evening. You fly straight on your course by compass, with the navigator getting 'fixes' from the wireless operator to check his position every now and then. Night falls when you are half-way across the sea. Nothing happens until the rear gunner speaks into your ears on the inter-com, pointing out a splotch of light on the starboard beam. This is a searchlight shining up from below the cloud layer. You are nearing the enemy coast. That is either one of his flak ships, or a searchlight position on an island, or on the coast itself.

"Soon you begin to see more lights and then a barrage in the distance. The old hands who know their way about these parts can soon say exactly where they are from the shape of a familiar barrage, without any need for their scientific means of plotting their position. However, nothing is left to chance. You carefully check your position, going down to get, if possible, a sight of the actual enemy coastline. Now, usually, is the only point of danger in the whole business. You may be shot up as you come down through cloud or, if the cloud goes down to sea or ground level, an inexperienced pilot may fail to pull out his aircraft in time. She may stall, heavily laden as she is, and flop on her tail into the sea.

"When you have fixed your position exactly, which is the most difficult and most important part of the operation, you hear the pilot say 'Bomb doors open.' 'Bomb doors open,' repeats the bomb-aimer. 'Over target now,' you hear the navigator's voice saying. 'Mines gone,' says the bomb-aimer. 'Bomb doors closed,' from the pilot. 'Bomb doors closed,' from the bomb-aimer.

"Up through cloud you go again, the searchlights groping for you. You may circle over an island or a flak ship, and a barrage prods its red fingers at you. But you will have to be very unlucky if anything comes uncomfortably near. 'Set course for home,' says

Digitized by Google

the navigator. 'On course,' says the pilot. The job is done, and there is nothing more except to seek for your base across the sea."

Considerable damage has undoubtedly been inflicted by this form of warfare. Its exact assessment must always be a matter of considerable difficulty. It is useless to photograph the target area for it is covered by the moving waters of the sea. That very many ships have gone to the bottom and that of late their number has increased, there is little doubt. The sources from which information about their fate is obtained are secret and must remain so. It must suffice to say that the growing volume of results thoroughly justifies the considerable expenditure of effort entailed. Moreover, in addition to losing ships and their cargo and the crews who manned them, a great strain has been placed on the German mine-sweeping organisation. The Germans have almost certainly been compelled to expand this at a time when they are short of ships suitable as sweepers and short of trained men.

6. MASCHINEN FABRIK AUGSBURG

BOMBER COMMAND is still taking a share in the Battle of the Atlantic, and will continue to do so as long as the battle lasts. It has bombed units of the German Navy at Brest, it has pursued them to Kiel and Wilhelmshaven; and when one of them, the "Prinz Eugen," joined the "Tirpitz" at Trondhjem, both were attacked two nights running on 28th and 29th April last, the attacks being pressed home with great determination in spite of bad weather and heavy defences. It has not confined its activities only to ships and their bases but has used the long range of its striking power to go far into Germany and deliver a blow at the production of submarines.

The Maschinen Fabrik Augsburg Nurnberg Gesellschaft—the M.A.N. factory, as it is called—manufactures many of the diesel engines which drive the U-boats on the surface. It is situated on the outskirts of Augsburg in Southern Bavaria. In the late afternoon of 17th April, 1942, a force of twelve Lancasters, flying in two formations of six, set out to attack it.

Very careful preparations had been made for this operation, which involved flying hundreds of miles in daylight over hostile territory. The factory covers a large area and the crews of the Lancasters were directed to drop their bombs on the main engine shops where they would do most damage. They were shown a pencil sketch of the

Digitized by Google

factory from which they had no difficulty in recognising their objective. They did so, in fact, when still some three miles away from it. Moreover, the situation of the factory in a fork made by the River Wertach and an *Autobahn* made it easy to identify. The Lancasters flew very low. Accurate map reading, notably by Flight Lieutenant Maclure and Pilot Officer Sands in the first flight, and Flying Officer Hepburn in the second, brought them to their destination.

The first flight, led by Squadron Leader Nettleton, ran into German fighters when well into France. In the battle which ensued, fought only fifty feet above the surface of the earth, four of the Lancasters were shot down. "I saw two or three fighters," said Squadron Leader Nettleton, "about 1,000 feet above us. The next thing I knew, there were German fighters all round us. The first casualty I saw was Sergeant Rhodes' aircraft. Smoke poured from his cockpit and his port wing caught fire. He came straight for me out of control and I thought we were going to collide. We missed by a matter of feet and he crashed beneath me. Two others went down almost at once and I saw a fourth on fire. At the time I was too much occupied to feel very much. I remember a bullet chipped a piece of perspex which hit my second pilot in the back of the neck. I could hear him say 'What the hell.' I laughed at that."

The combat lasted about a quarter of an hour. When it was over Squadron Leader Nettleton, undeterred by the loss of all but one of his companions, flew on towards Augsburg. Over France he noticed people working in the fields and cows and sheep grazing, and a fat woman wearing a blue blouse and a white skirt, and horses bolting at the roar of his engines, with the ploughs to which they were attached bumping behind them. But once in Germany nothing was to be seen. The fields appeared untenanted by man or beast, and there was no traffic on the roads. But "when we got near the target they started to shoot at us, but the heavy flak soon stopped—I think because the gunners could not depress their guns low enough to hit us. The light flak, however, was terrific. We could see the target so well that we went straight in and dropped all our bombs in one salvo." Flying Officer Garwell did likewise: but his Lancaster was hit and caught fire. He landed two miles from Augsburg.

The second formation of six, led by Squadron Leader Sherwood, encountered no fighters. All they saw was a single German Army Co-operation aircraft, which approached them and then made off quickly. Just inside Germany Flight Lieutenant Deverill noticed a man in the uniform of the S.S. Nazi Guards who took in the situation at a glance and ran to a nearby post office where there

Digitized by Google

was a telephone. A little further on the Lancasters passed over a squad of German soldiers doing P.T. Their physical exercises were enlivened by a burst of fire from one of the rear gunners, and "the speed with which they took cover did great credit to their instructor." Crossing a lake near the objective, the bombers passed over a small steamer and a German on deck discharged his *Mauser* at them without noticeable effect.

No life was lost in vain

They reached the target at a few minutes past eight and at once saw the two aircraft, which were all that remained of the first flight, dropping their bombs. They flew straight in through heavy fire. Contributing to it was a solitary German on the top of the main building of the factory, blazing away with a machine gun. He was shot off the roof by one of our rear gunners. When still three miles away the Lancaster piloted by Warrant Officer Mycock was hit and set on fire in the port wing. Warrant Officer Mycock was still far enough away to have turned and made a forced landing; but he carried on, dropped his bombs accurately on the target, and then, the flames having spread so as to envelop the whole aircraft, crashed to earth. The leading Lancaster, piloted by Squadron Leader Sherwood, dropped its bombs before it, too, was set on fire. It was last seen a pillar of flame on the ground ten miles from Augsburg. Another flew so low that it passed between two chimneys of the factory.

The Lancaster piloted by Flight Lieutenant Deverill, which had been hit in the starboard wing when approaching the target, was hit again over it and a fire started in the pipes leading to the aft and mid turrets. It was extinguished by the wireless operator as the bombs were dropped in a short stick. On turning away, the port outer engine stopped but was successfully started again on the way home. Squadron Leader Hallows' aircraft was hit near the port petrol tank when above the Assembly Shop, but his bombs reached the target.

Altogether seven out of the twelve Lancasters did not return. But they accomplished their mission. Photographs show that the main Diesel Engine shops were severely damaged by a number of direct hits and by the subsequent fire and that at least three other buildings next door to them were demolished and four more damaged. Production appears to have been seriously affected for some time. In the words of the Prime Minister: "No life was lost in vain."

Digitized by Google

Among other awards the leader of the first formation, Squadron Leader Nettleton, was given the Victoria Cross, Squadron Leader Penman, D.F.C., and Squadron Leader Sherwood the Distinguished Service Order, Flying Officer Garwell and Warrant Officer Kirke of the Royal New Zealand Air Force the Distinguished Flying Cross, and Sergeants Dando and Watson the Distinguished Flying Medal.

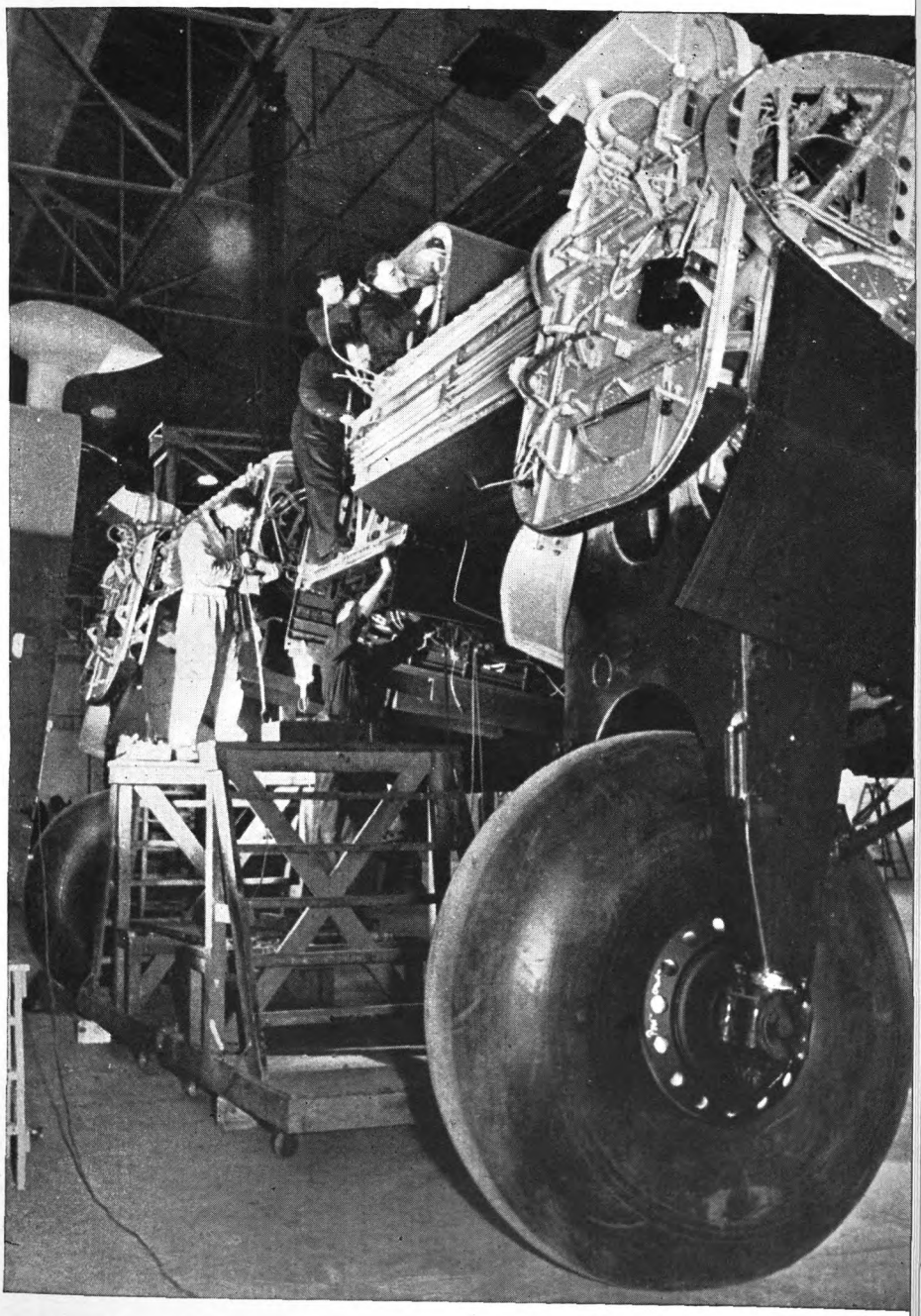
7. HELP TO RUSSIA

THE KEYNOTE of our bombing policy has been the provision of all possible help to our Russian Allies in the common task of defeating the Germans and bringing about their complete and total discomfiture.

The phases through which operations conducted to that end have passed or are still passing must now be considered in greater detail. The first phase began at the end of June 1941 and lasted until about the middle of February 1942. During it our night bomber force was given as its objectives certain important centres of communication in Germany, with the primary object of dislocating the German transport system which found itself subjected to a constantly increasing strain as the campaign against Russia developed. The second object of this attack was to destroy war factories and stocks of war materials. Each success in this field of endeavour would lower the vitality of the German war effort.

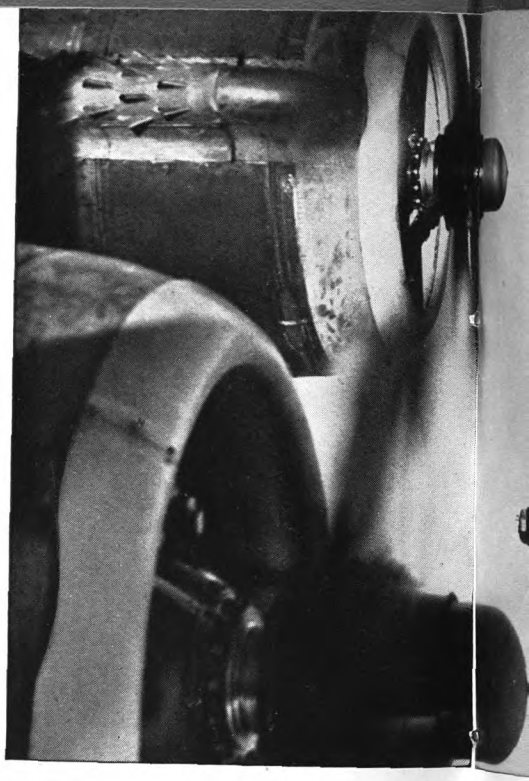
A successful start was made by the attacks on Aachen, Munster and Cologne in the first half of July 1941, when considerable damage was done to railway and other communications. These were followed by a raid on Mannheim on the night of 21st/22nd July, which came as a complete surprise to its inhabitants Many fires were caused in the Rhine harbour area and in nearby Ludwigshaven. The important electrical works of Brown Boveri were also hit and damaged. The attacks continued in the first week of August with damage to factories, notably the big I.G. Farben Chemical Works near Cologne, and to the railway. By the middle of the month, railway workshops in Cologne had suffered greatly. At Karlsruhe, attacked on 6th/7th August, the power station was put out of action for a week and the main railway station severely damaged.

Digitized by Google



The Giant Takes Shape. A Halifax nears the end of the assembly line; the bulkheads are being prepared to receive the engines. Note the intricate detail of the mechanism and that the wheel is as tall as a man.

Digitized by Google

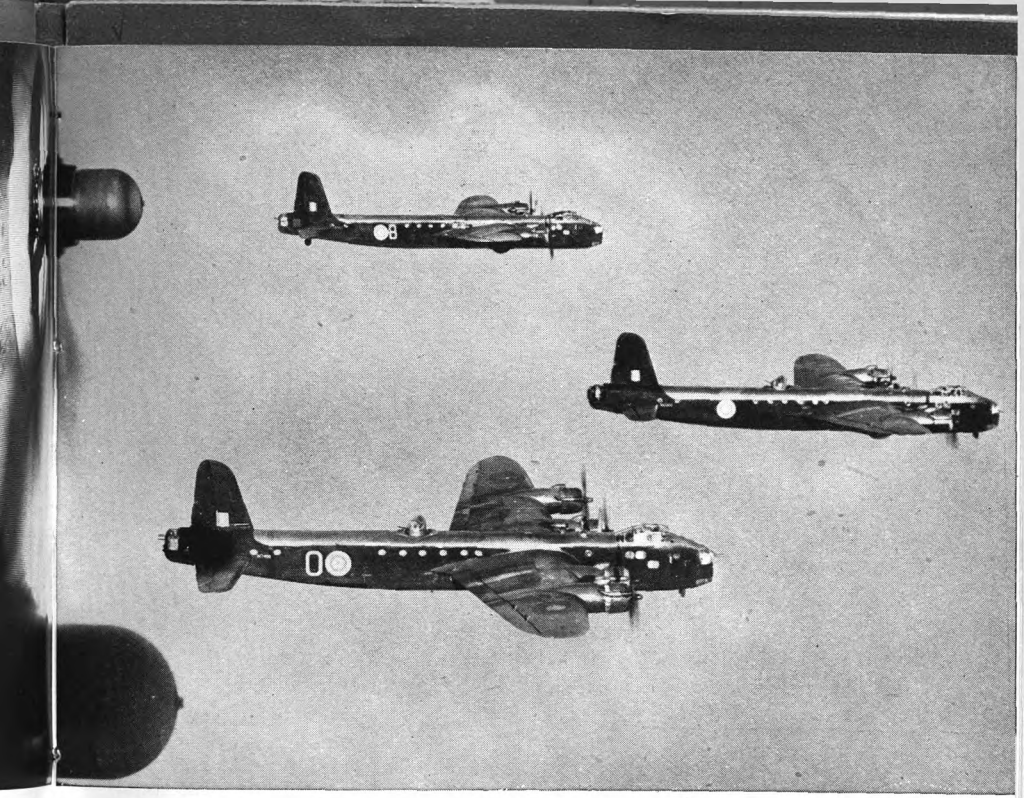


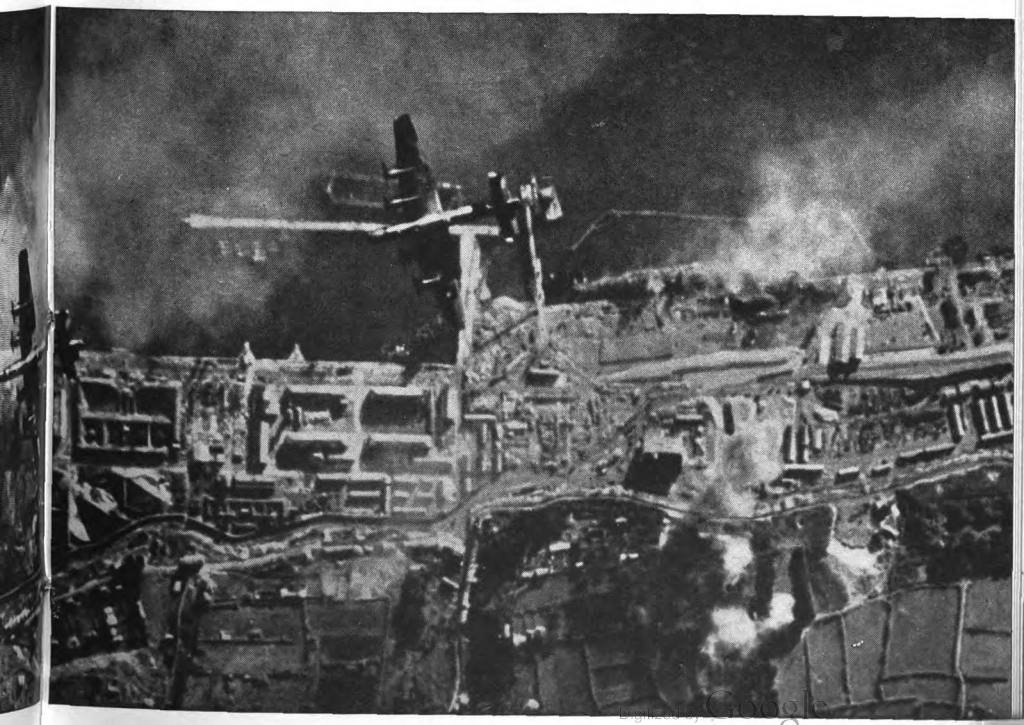
The Giant Takes Wings. Stirling bombers are swinging from test flight into action in rapidly growing numbers. They contain more than 60,000 separate parts and weigh over thirty tons.



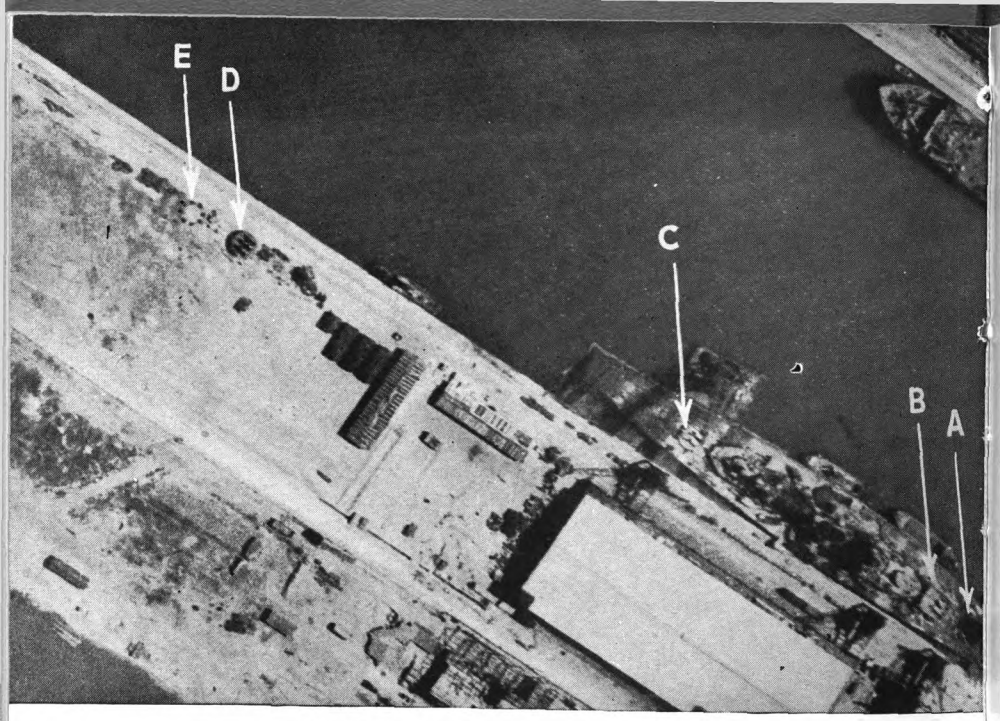
The Attack on the Sea-Bases. Halifax bombers over Brest by day. "Scharnhorst" and "Gneisenau," obscured by smoke screens, are in dry dock on the left. "Prince Eugen" is in the basin to the right, behind the second bomber.

Digitized by Google

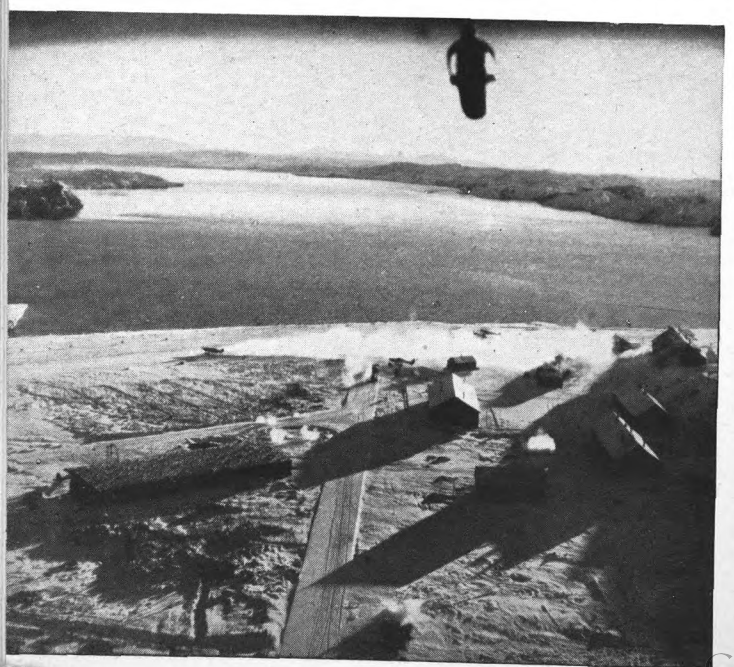




Digitized by Google

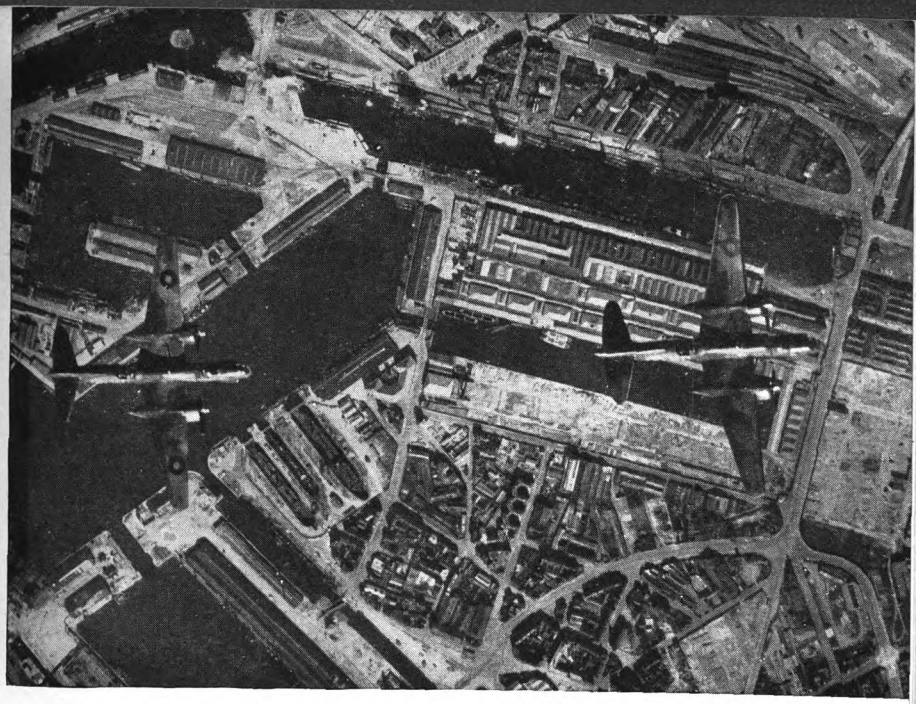


"Gneisenau" at Gdynia. The damaged German cruiser takes refuge in the Eastern Baltic. The turret at A has been removed from the ship to D, the ball bearings on which it revolves to E. Turrets at B and C are minus guns and armour.

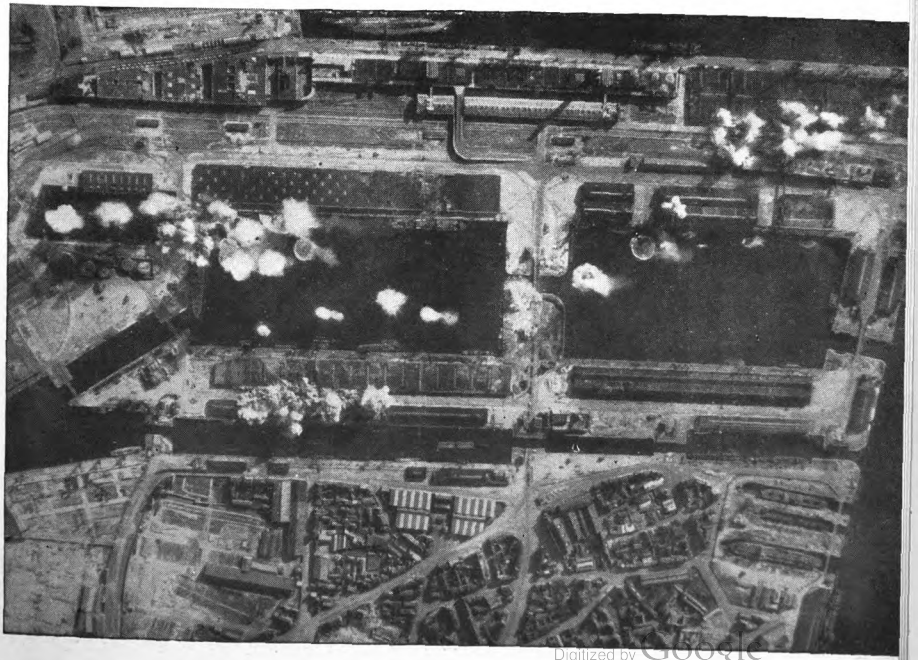


Raid on the Luftwaffe. The attack on Herdla aerodrome, to ground enemy fighters during the combined operation against Vaagso. An Me. 109, on the move down the runway, fell into a crater which appeared suddenly just in front of it.

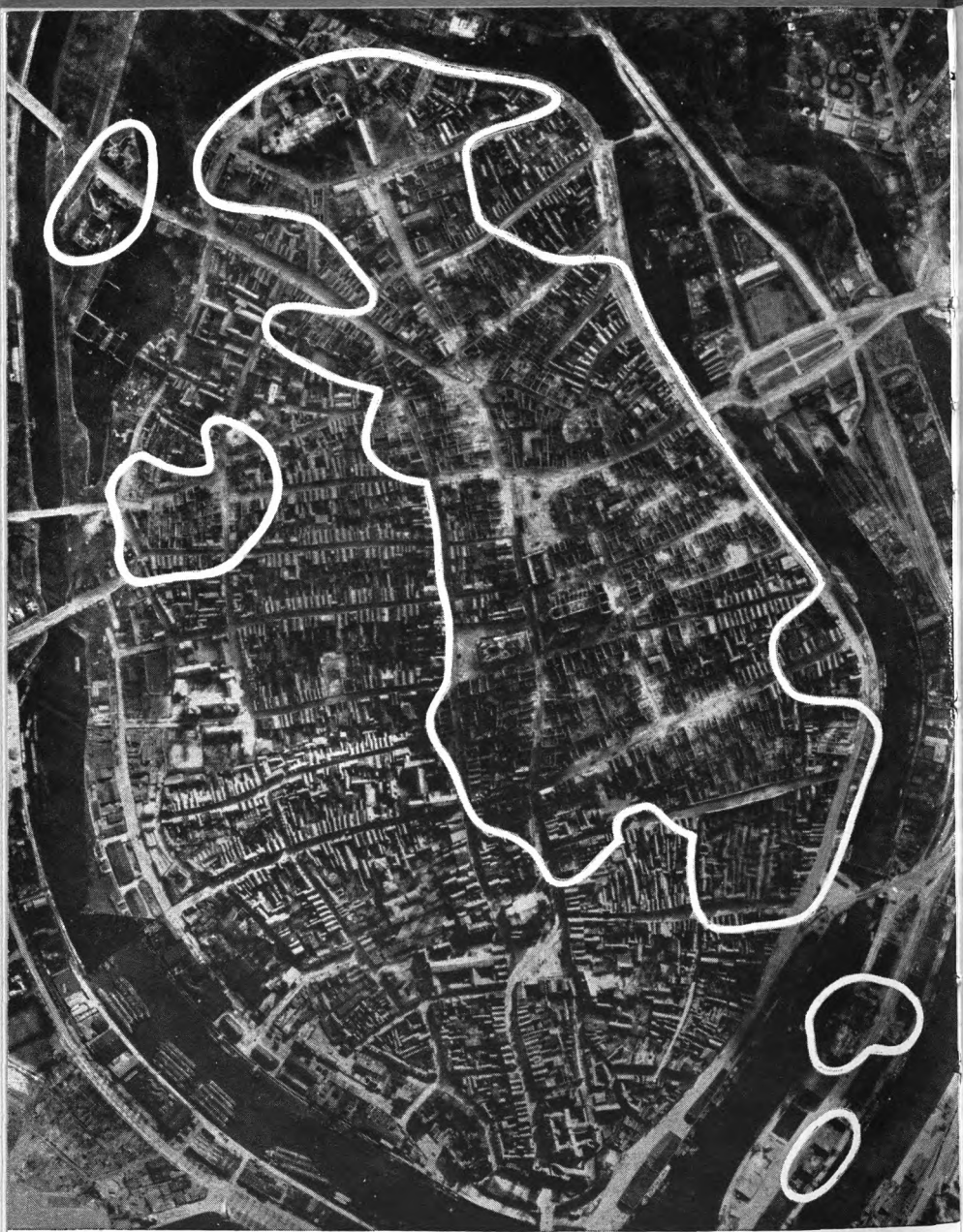
Digitized by Google



Bostons over Le Havre. *Above*—A first stick straddles the bridge between the Bassin Vauban and the Bassin de la Barre. *Below*—The attack at its height, bombs burst in clusters among the quayside buildings, on the railway and across the basins.



Digitized by Google

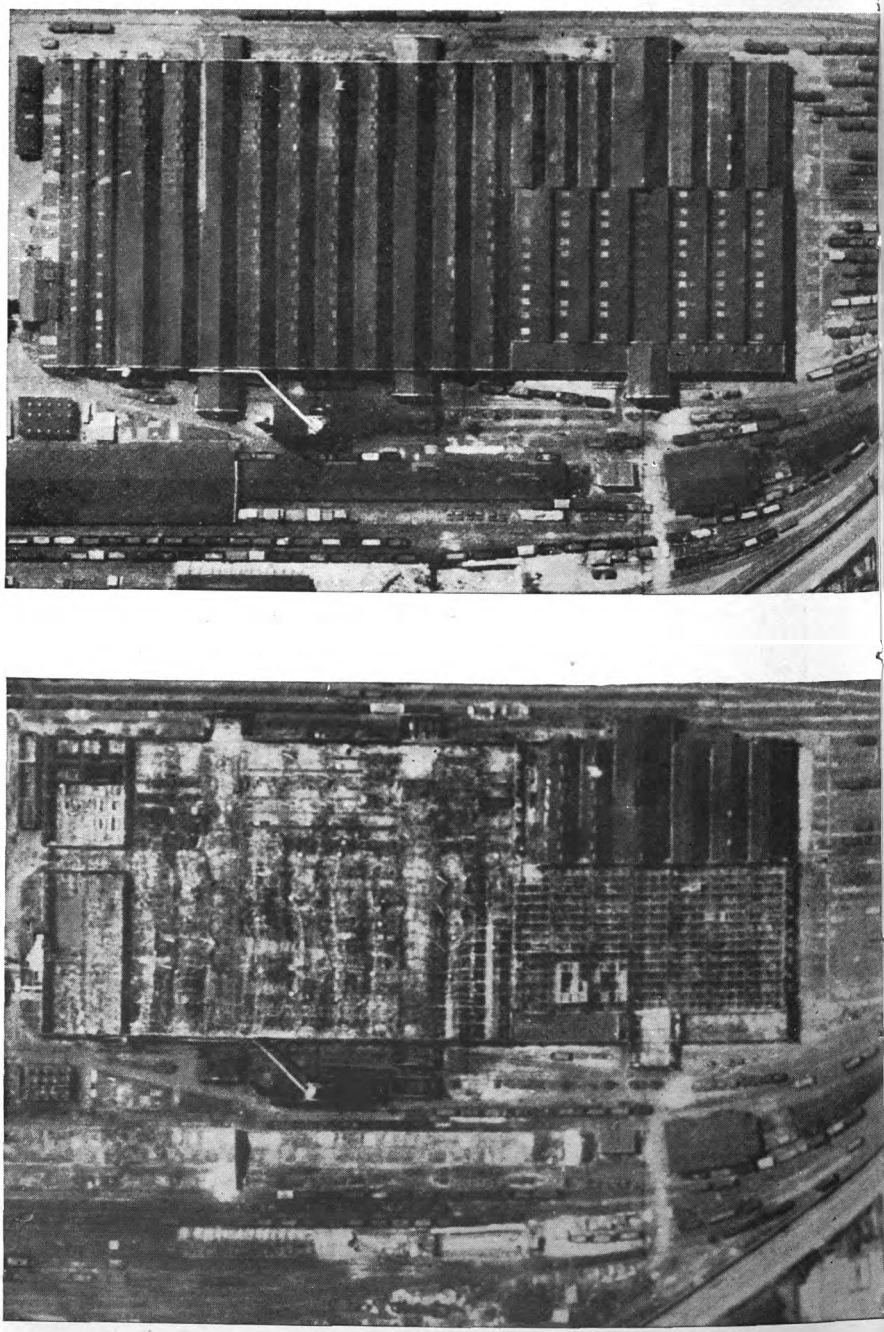


Lubeck, Port for Russia. Fire and bombs destroyed accumulated supplies intended for the Russian front. In the town the ringed sections show hundreds of honeycombed, roofless buildings.

The Offensive Grows. In March 1942, in bright moonlight, 457 tons of bombs rained down on the Renault works, busy on tanks and transport for the Nazis. The great workshops were torn open, finished lorries scattered like chaff.

Digitized by Google





The Hammer strikes Cologne. A pinpoint in the devastation from the 1,000-bomber raid. The Köln-Nippes railway workshops before and after; destruction is almost complete.

Digitized by Google

One attack on Knapsack and Quadrath, carried out in daylight on 12th August, must be specially mentioned. It was directed against the power stations and factories in those towns, which are near Cologne, by 54 Blenheims. The Blenheims were escorted on their way out by Whirlwinds of Fighter Command, and flew low over a choppy sea until they saw the sand dunes of Holland. There the fighters left them and they went on alone, in formation, for 150 miles to reach their targets. The leading aircraft bombed from a very low level, and, when those in the rear arrived, they found the industrial area well alight and could see thick smoke and steam gushing from the perforated boiler houses. By that time the anti-aircraft defences were awake and active. One Blenheim was hit ten times in the port wing alone before reaching the target. "We could see the twelve chimneys—a row of four and a parallel row of eight—standing dark against the sky," said its pilot, "The sun was on our port bow. We climbed to attack because the smoke and flames, some of which were licking to about 50 feet high, were already too thick for us to go through and bomb accurately. I could see my observer's elbow as he pulled back the release lever, and as he called 'Bombs gone' I did a steep turn over a belt of trees down into a sandstone quarry to escape the flak."

Coming out of the quarry the Blenheim, with others, ran into fighters. "It must have been then that the rear gunner was hit, because we heard no more from him. I went into nine boost for more evasive action and a bullet came in behind my head and broke the perspex, while another smacked the armour plating at my back and gave me a slight jerk." In seeking to avoid the fighters the pilot of the Blenheim chipped an airscrew against a telegraph post and hit a tree with the tip of his port wing. Nevertheless the Blenheim continued to fly.

"I gave the observer a shell bandage and he managed to creep through the hole to the rear gunner. I could see his legs waving about as he bound him up. We came back through a gap between two storms and made straight for base. Our undercarriage had been put out of commission and so the observer had to crawl back once again to hold down the rear gunner while we made a successful belly landing."

Prior to the attack on Knapsack, a Fortress had bombed Kiel docks in daylight from the substratosphere on 2nd August. On 31st of that month another Fortress bombed Bremen in a similar manner and the attack was repeated on 2nd September. The effect on German morale was reported to be serious, as the first intimation of our presence was usually the arrival of the bombs.

Digitized by Google

Fortresses were subsequently used to attack shipping in Rotterdam on 4th September and in Oslo on 6th September and again on the 8th, when two fell victims to fighters. But the weight and scale of their attack could not be made heavy enough to justify the possible loss of a number of highly trained crews, and these daylight attacks from the substratosphere were discontinued.

Bombs on Berlin

Night attacks from September to the end of January were made against a variety of targets in North-Western Germany and the Ruhr and as far as Stettin on the Baltic. They differed considerably in weight and success, those on Cologne and Essen on 10th/11th October, on Emden on 20th/21st, on Bremen on the next night, on Mannheim and Cologne on 7th/8th November, on Dusseldorf on 27th/28th, on Emden and Hamburg on 30th November/1st December and on Wilhelmshaven on 28th/29th being, on the whole, satisfactory. The raid on Nuremberg on 14th/15th October was less effective owing to bad weather. On that raid a Wellington flew 600 miles back to base on its port engine—a remarkable feat, creditable to pilot, crew and the engineers who made the engine. Berlin itself was attacked five times before the end of 1941, the two heaviest assaults being those on 7th/8th September, and on 7th/8th November.

To bomb Berlin means flying some 1,200 miles there and back, mostly over hostile territory. The enemy has not unnaturally concentrated very powerful defences round his capital and here, as elsewhere, makes extensive use of dummy fires. These may deceive a crew lacking in operational experience, but the practised observer can usually distinguish between the genuine and the *ersatz*. The German use of searchlight belts is well known. Nowhere are searchlights more concentrated than they are at Berlin and the flak is always very heavy. "We carried on until we got to Berlin, where we saw other bombers being engaged by searchlights and guns. The guns were shooting up into the main cones of searchlights," runs the report of the captain of a Stirling. "There seemed to be about fifty searchlights in one bunch alone," says the navigator of a Halifax. "Shells burst close, some of them sending out clouds of smoke which, in the night sky, looked almost like barrage balloons."

Berlin is not an easy place to attack. Nevertheless, the damage in those five raids was not negligible. In the attack on 7th/8th September, for example, 50 out of 65 postal wagons were destroyed in the Potsdamer Railway Station, which was itself severely damaged.

Digitized by Google

The railway lines leading to the Anhalter and Friedrichstrasse stations were hit in many places, and traffic was dislocated or brought to a standstill for some time. Warehouses were burnt to the ground near the Ost Kreuz station. A 4,000-lb. bomb completely demolished five large buildings in the Pariser Platz at one end of the Unter den Linden and killed more than a hundred persons. Some two hundred more are reported to have been scalded to death by the hot water system which burst and flooded the basement in which they were sheltering. On 7th/8th November the Spandau Power Station was hit and damage was caused to a considerable area of Moabit, one of the working-class quarters of Berlin.

Losses that night were considerable—37 out of just over 400. Among them was a Wellington, but the crew reached England sixty hours after the aircraft was hit. Their high explosives had fallen, but the target was obscured by cloud before the incendiaries could be dropped. On the way home the pilot was looking for a suitable target for them when the Wellington was hit by A.A. fire. The incendiaries began to burn, and soon the bomber was ablaze along the whole length of the bomb racks. The bomb release gear had been smashed and the incendiaries could not, therefore, be released. They burned strongly and set light to the fuselage; the fire resisted all attempts made by the crew to put it out, first with the extinguishers and then with coffee from their thermos flasks.

The wireless operator took ten minutes to fight his way through the smoke and flames to reach the rear of the Wellington, whence he could let out his trailing aerial. This would give him a greater range and increase the chances of maintaining contact with base. The pilot remained at the controls but could speak to none of the crew, for the inter-com was broken. The blazing bomber flew on. Eventually the fire in the fuselage was subdued, but the incendiaries still burned. All this time flak was bursting round the aircraft, and the pilot decided to close the bomb doors in order to show as little light as possible to the German gunners. With fire in its belly the Wellington made out to sea, away from the coasts of the enemy, but it was now down to 1,000 feet. Twenty-five minutes later the petrol gave out and it landed on the water. The crew got safely into the dingy in which they remained 57 hours till they reached shore, near Ventnor in the Isle of Wight.

Throughout these months and well on into 1942 Bomber Command was faced by a series of heavy assaults from its ever-lurking foe, bad weather. That autumn and winter, it was the worst recorded for fifteen years. By the uninstructed, or by those possessed of but

Digitized by Google

a little learning, bad weather is often regarded as an excuse for failure or lack of action, The more thoughtful and better instructed however realise the very terrible obstacle it may prove to a heavily laden bomber moving through the dark spaces of the night to seek out its target and release its load. To such persons the observations which follow may appear superfluous.

The ever-lurking foe: bad weather

There are five aspects of the weather to be considered every night a force of bombers sets out to the attack—the weather at the time of the take-off, on the way to the objective, over the target, on the way back from it and over base at the time of landing. The longer the flight and the farther the target is from home, the more difficult it is to make a correct prediction and the more unlikely it is that the weather will be favourable throughout all these five periods of time and at all five places.

For a long flight to Berlin and back, for example, it must be possible to predict with reasonable certainty the weather over the whole Continent of Europe throughout a whole night. On the other hand, it is unlikely that there will be a great variation or that any surprise features may develop when the trip is a short one, such as to the Channel ports or to Rotterdam. There is, however, always the chance that there may be fog or low cloud over the aerodrome at the time of landing. That is, perhaps, the worst hazard.

Next to this and almost as important is the risk of icing. To fly through dense and cold cloud may and often does cause ice to form on the propellers and wings of an aircraft. When this happens it becomes heavy, loses height and may become uncontrollable. A Wellington iced-up over Munster on 28th January 1942, for instance, fell from 19,500 feet to 2,500 before control was regained. When this happens over a well defended area, the consequences are likely to prove disastrous.

Moreover, good bombing weather is not necessarily good flying weather and *vice versa*. While the man on the ground is enjoying an Indian summer, the man who must traverse the air is often praying for a stout gale to blow the morning fog away. Conditions which produce haze on the ground so that the target is hidden may occur on a night when there is perfect flying weather higher up in the sky. There are a great many factors which the Met. Officers of Bomber Command have to take into account. It is only when all or most of these are unfavourable—when, that is, there is everything to lose and nothing to gain, that an attack is cancelled.

Digitized by Google

On thirty-nine nights between 30th July and 31st December, 1941, our bombers operated in weather variously described as "bad," "extremely bad," "very poor visibility," "thick cloud," "icing and ten-tenths cloud."

8. BOMBING BY DAY

WHILE PURSUING these activities at night during this period, Bomber Command was also active by day. The attacks made by the Blenheims on shipping have already been described. There were also those made by them on fringe targets such as the docks at Rotterdam and Ijmuiden. These were of two kinds—with and without fighter escort. Let us first consider the attacks for which no fighter escort was available because of the distance of the targets from our shores. For these attacks to be successful the element of surprise had to be present. The Blenheims, singly or in formation, rushed in low from the sea and out again before the defences awoke. They usually opened heavy fire after a minute. The German defences, both ground and air, were not always ready, however. Had they been so, this form of attack would soon have proved too costly.

An action off Ijmuiden fought last autumn well illustrates this kind of warfare. Five Blenheims, led by Flight Lieutenant (now Wing Commander) Roe, D.F.C., searching for an enemy convoy, had approached within a mile of the Dutch port of Ijmuiden when they were spotted by an Me. 110. The enemy did not attack; but a few minutes later, when the British aircraft had turned for home, four Me. 110s were seen to be pursuing them, and battle was soon joined. The Blenheims were somewhat scattered. Three of them were in Vic formation but the other two were lagging behind. They were shot down by the Me. 110s, which then proceeded to attack the formation of three, two coming up in echelon to port and two to starboard. Pilot Officer Davies, Wing Commander Roe's rear gunner, directed the fight. If a Blenheim is attacked by a faster aircraft, such as the Me. 110, the obvious avoiding action is for it to turn towards its attacker. To do so forces the fighter to carry out a beam attack: at the speed at which modern aircraft fly, this brings the Blenheim into its sights for a very short time only.

The starboard Messerschmitts accordingly advanced to the attack.

Digitized by Google

The Blenheims turned to starboard, and by so doing had to present their tails to the Me. 110s coming in from port; these prepared to attack them from an angle at which the maximum amount of damage could be inflicted. They were about to rake them from stern to bow, when P/O Davies called upon his pilot to throttle back: he did so, and thus the Me. 110s to port were made to overshoot and failed to get their guns to bear in time, while those to starboard also overshot and presented their port side as targets for the front gunners of the Blenheims. This manœuvre was repeated several times, the Blenheim formation turning, now to starboard, now to port, with the result that they escaped unscathed and shot down one of the Me. 110s when it passed within 50 yards of them.

Thirteen Blenheims went to Herdla

One attack is worthy of special mention—that on the Norwegian aerodrome of Herdla, carried out by thirteen Blenheims under the leadership of Wing Commander Pollard on 27th December, 1941. Its object was to ground the German fighter forces at Herdla while a combined raid by the Royal Navy and the Army, protected by long-range fighters of Coastal Command, was carried out on Vaagso. To achieve this purpose, it was necessary for the Blenheims not merely to hit the wooden runways of the aerodrome, but to hit them at precisely the right moment. The hour of noon was chosen, and the bombs from the British aircraft fell on the objective at one minute past that hour. Flying in formation across more than 300 miles of sea at a very low level requires navigation of a high order. It was the navigator of Wing Commander Jenkins', D.S.O., D.F.C., aircraft, Flying Officer Brancker, D.F.C., since missing, who took the Blenheims to their destination.

"The first thing we saw were the mountains of Norway some 70 miles away. It seemed an age before we reached them, but when we got close to the shore we turned to port and flew about ten miles northward some three miles from the coast line. We were looking for a little bay, the narrow opening into a fjord, and our landmarks were lighthouses. For some little time I was confused, for the landscape looked very different from what I had imagined it to be from a study of the maps and photographs shown to us before the attack. Presently, however, I realised that the mountains I had seen formed the background to the coast which had been depicted on the maps and charts. My navigator was never in doubt and distinguished immediately between the fore and the background.

"There were a man, a girl and a child on the edge of the fjord,

Digitized by Google

waving to us, just as we turned in to attack the aerodrome. I remember saying to myself, 'For God's sake get under cover—the shooting is going to start'; and indeed it did so as we swept in. The German anti-aircraft defences opened up, but they had been taken by surprise and for a very important minute we were not shot at. During that minute each section of the Blenheims made for that part of the runway assigned to it beforehand. The bombs were dropped 'according to plan.' I saw them dig into the snow where they stuck a moment like darts in a board before going off.

"There were a number of Me. 109s, with their propellers turning, about to take off. They failed to do so, and one which was on the move down the runway fell into a crater which appeared just in front of it. The runways themselves were hard to find because the whole countryside was covered with snow, but we picked them out because we could see a line of barrels and flags marking them, and we could also see furrows in the snow made by taxying aircraft. We had some casualties. In my formation the port aircraft was hit, reared up over me, nearly collided with me, then sheered off and ran into another Blenheim. The ground staff of the aircraft were all round the runways. Most of them, I think, were killed by the bombs or the continuous barrage of machine-gun fire put up by our air gunners. We certainly wrote off a great many Germans. On the way back it was wizard to see the Norwegians waving to us. I felt I wanted to stop and pick them all up and take them back to Scotland."

Attacks with fighter escort

Attacks by Blenheims accompanied by escorts were, of necessity, directed on targets within the limited range of high-speed fighters, and could be carried out only in weather suitable for such fighters.

A start was made with this form of attack on 10th January, 1941, and up to 12th July 59 assaults had been delivered. The tactics were, and are, to send out a small force of bombers very heavily escorted. Having made a rendezvous, bombers and fighters proceed to the targets; the bombs are dropped; the fighters engage any enemy fighters who show a disposition to interfere, and the whole force then returns to base.

The method of "laying on" daylight attacks by escorted bombers is as follows.

Some hours beforehand, the bombers destined for the purpose are detailed and the number, kind and fusing of the bombs decided. The time, place and height of the rendezvous with the fighters are

Digitized by Google

fixed, the route and direction of approach to the target settled. Half-an-hour before the time of briefing, the Wing Commander whose squadron has been chosen for the attack obtains all possible details about the target from the Station Intelligence Officers, who have many sources of information. If shipping in harbour is to be bombed, the size and nature of the ships is indicated. The routes to and from the target are plotted on a map.

All these details are communicated to the crews by the Wing Commander at the briefing, and the target is displayed on a screen by means of an epidiascope. Assisting him at the briefing are the Signals Officer and the Met. Officer. Wireless silence is strictly enjoined and maintained. Since these are daylight attacks, the elaborate methods of navigation used at night are not necessary; the observers navigate by map reading, pin-pointing their position from time to time. The bombers then take off, reach the rendezvous with the fighters, and fly in formation to the target.

If possible, they remain in formation throughout, taking evasive action and dropping their bombs all together. The most perilous moments are naturally those during which the run-up to the target is made. Then the bombers have to fly on a steady course for a certain number of seconds, usually very crowded, in order to bring their bomb sights to bear. It is then that the anti-aircraft fire of the enemy reaches a crescendo. "It is a very splendid sight," writes a fighter pilot, "to see the bombers fly so steadily on, though the flak seems to be bursting all round them. They see but disregard it."

The Blenheims bore the brunt of the daylight attacks through the autumn and winter of 1941, operating both with and without fighter escort, though Stirlings and Halifaxes occasionally took a hand, notably on 18th December when they bombed the "Scharnhorst," "Gneisenau" and "Prinz Eugen" at Brest. As the autumn of 1941 merged into winter the attacks fell off; the weather was bad for fighters, which need a clear sky, and clear skies were conspicuously absent.

The most successful attacks during this period were those made on the steel works at Ijmuiden on 21st August, on an aerodrome near St. Omer on the 26th, and on Rotterdam on the 28th, when hits were made on a large vessel in the harbour and bombs burst among warehouses and wharves. In September a motor vessel was sunk off the Belgian coast on the 2nd; a whale oil factory ship off Cherbourg set on fire, and a chemical plant at Mazingarbe severely damaged on the 4th; the power station at the same place hit on the 17th, and another at Rouen on the next day. On the 20th a supply

Digitized by Google

ship was fired and another left sinking, while the railway junction at Hazebrouck was hit and heavy explosions caused in the power station at Gosnay. On the 27th the power station at Mazingarbe was once more hit. In October the docks at Boulogne were bombed on the 12th, and on the 13th Mazingarbe again received attention, while two days later direct hits were made on the docks and warehouses of Le Havre and a large vessel blown up.

"What's the matter with Jerry?"

The attacks died down from November to February. By then the Blenheims had suffered severely. They had proved themselves to be stout aircraft. In one attack on Ostend, for example, a Blenheim was hit by three bursts of flak which broke the stern frame, holed both engine nacelles and petrol tanks, shot off the knob of the petrol cock and peppered the bombs with splinters just before they were released. Another splinter, smoking with heat, was pulled out of the pilot's back by his observer. "I had cause to remember that day," said the pilot, "because just before the splinter hit me I had been saying over the intercom, 'What's the matter with Jerry? He seems asleep.' This remark very nearly found a place in the list of famous last words." Despite its injuries the Blenheim returned safely.

Blenheim squadrons have now become "intruders." For some time they have been used in the dangerous and important task of bombing the aerodromes which the enemy has stolen or constructed in the Occupied Territories. This work they share with the Hurricanes, Havocs and Bostons of Fighter Command. They go out at night over such bases as Schipol, Leeuwarden, Vechta and many others and drop their bombs on the flare paths. The number of enemy aircraft disposed of in this way is steadily increasing.

By the middle of February 1942, when the first phase of our bombing attack merges into the second, the general policy of dislocating Germany's war supplies at the source of their production was beginning to have effect on the situation of the war in general and on the Eastern Front in particular. By then the steel works at Essen, Duisberg and Dusseldorf had been frequently hit; so had the I.G. Farben chemical works near Cologne, the E. Merck works at Darmstadt and eleven power stations in Germany. Severe damage had been caused to three tyre factories at Hanover and the synthetic rubber factory at Huls; the boot-leather factory at Worms had been burnt out, and the output of lorries at Antwerp seriously held up. In Northern France the attacks on power stations in daylight had

Digitized by Google

been successful, power having been reduced by at least twenty per cent. in the industrial regions of Lille and Lens.

So much for examples of material damage. It had not been as great or as widespread as had originally been hoped. Our bomber force throughout the autumn and winter was hampered by most evil weather; but, though it could not operate as frequently or on as large a scale as it desired, Bomber Command was not idle. Intensive training was carried on, and through those months our bomber force was steadily expanding, with results which are now becoming apparent. By February 1942 the increase in the proportion of heavy bombers in the Command, the vigorous training and the general all-round expansion of the force made it possible to undertake a more severe attack upon Germany. Moreover, the departure of the "Scharnhorst," "Gneisenau" and "Prinz Eugen" from Brest, and their arrival in their home ports, allowed the Commander-in-Chief to devote almost the whole of Bomber Command to this end.

9. THE GREATER OFFENSIVE OPENS: BOSTONS OVER FRANCE

AS WITH THE first phase, the second may be divided into two kinds of operations, those carried out in daylight and those at night. The daylight attacks have been made almost entirely against targets in Northern France and Belgium. By the beginning of 1942, the German attempt to make use of industry in the Occupied Countries in order to increase their own war effort had succeeded to such an extent that production of war materials in those countries could no longer be regarded as a negligible factor. It was accordingly decided to attack factories known to be engaged in working for the Germans, with the object of dislocating or destroying production. That the industrial population of France and Belgium have been steadily exhorted to "go slow" is common knowledge. The difficulties under which they are leading their unhappy lives are well known and have always been recognised. To attack the areas in which workers living under the domination of Germany carry out their tasks is distasteful. No one realises this better than the crews of Bomber Command. That they carry it out unflinch-

Digitized by Google

ingly is proof of their high sense of duty, even when that duty may entail death or injury to citizens of friendly but enslaved powers.

The raid on Poissy

The beginning of our daylight attacks has already been described. With the advent of better weather Bomber Command resumed them, usually with fighter escort, at the beginning of 1942. By then it had received a sufficient number of Bostons, a fast American medium bomber, to make use of these aircraft in these operations. They made their debut on 8th March 1942, when two formations attacked the Matford works at Poissy, near Paris. They flew there and back at a very low level, seeing in the air on the way to the target only three Ju. 88s some 2,000 feet above them, who did not notice them. Flying at that height, navigation is a problem of quick and accurate map reading.

The leading aircraft, piloted by Wing Commander Butler, D.F.C., with Flying Officer Sayers as navigator, reached the target exactly on time. The others followed. Ten direct hits were made on the factory, and the formation turned for home. Wing Commander Butler's aircraft was evidently damaged by anti-aircraft fire, for a few miles from the factory it was seen to be in difficulties, struck a tree with its port wing, stood on its tail in a vain effort to clear more trees, and then crashed. "What I remember most about this raid," said one of those who took part in it, "was a house painted blue with the words *Dubo-Dubon-Dubonnet* on it. I wanted to get out and have one." With the exception of its leader, the flight returned safely, landing at one of our Coastal aerodromes just as three Me. 109s made an attack upon it. The bomber formation saw one of them shot down by the ground defences.

During the rest of that month the Bostons operated nine times, and in April they were out seventeen times—rather more than every other day. The weather was favourable and they scored marked successes on five occasions. On the 14th they hit the power station at Caen; on the 16th they went to Le Havre. There they hit a large ship in the harbour. While they were in the act of dropping their bombs, a shell burst in the middle of the formation, shattering the front window of Boston Z2295, whose observer was at the bomb sight. For a moment he thought his right eye was gone, so he switched over to his left and bombed. He found later, to his good fortune, that it was only the eyelid which was damaged.

The Boston had to come home on its starboard engine, the port engine having been hit. The airspeed indicator was also damaged,

Digitized by Google

and it was therefore impossible for the pilot to gauge the correct landing speed. This was given to him by the pilot of an escorting Spitfire whom he called up, and who flew alongside telling him from time to time over the wireless telephone at what speed he was flying, until he had reduced it sufficiently to land. On the next day the shipyards and power station at Rouen were hit, some of the bombs falling at the base of the cooling tower. On the 26th the Bostons were over the marshalling yards at Hazebrouck and twelve bursts were observed in their centre. They were out every day for the first nine days of May on the same or similar targets. Then the weather prevented operations, which were resumed as soon as possible. On 3rd June a power-station and barracks at Cherbourg received direct hits, and on the 5th power-stations at Ostende and Le Havre, and the aerodrome at Morlaix.

Spectator in the air

Here is an extract from a log in which a Public Relations Officer of the R.A.F. who took part in one of these attacks has recorded the impressions of a spectator not in the front row but on the stage itself.

"**3.50 p.m.** Quite suddenly it is intensely cold. I am not wearing gloves and my left hand is numb. I am in the under-gunner's position now, looking out over a large hole. We have climbed to 12,000 feet. The sea looks completely stiff. I can see the waves clearly but they are motionless, like a solid mass of uneven grease.

"**3.55 p.m.** French coast on the horizon. Physically this is exhilarating and I keep saying to myself 'Well, you're not scared . . . yet.'

"**4.0 p.m.** We cross the coast. Here comes the flak. The white flak bursts are higher and nearer and more frequent. Goldy, the observer, calls out, 'Don't worry, Leslie, until you can see the red inside the white.'

"**4.03 p.m.** I can see the red inside the white,* but quite honestly I am not worried. The whole thing seems too efficient to worry. . . . But I feel for the handle of the parachute and touch the dinghy.

"**4.04 p.m.** Bomb doors open on every Boston in the formation.

"**4.05 p.m.** Bombs gone. In my excitement I put my head as far

* This is possibly an open question. Some maintain that really close bursts contain orange and not red inside the white.

Digitized by Google

out of the hole as I can reach and watch them going down, down, down. The first bursts are in the dock water, but then I see the direction for which the stick is heading. White mushrooms of smoke suddenly spout on the dock side. Good.

"**4.06 p.m.** Flak is now very intense. Black puffs as well as white. Violent evasive action. I can see Hun fighters coming in. But I have a wonderful impression of immunity, a sort of godlike feeling that nothing can touch us. I should know better than this.

"**4.07 p.m.** Hell. There goes a Boston. Quite slowly, but he's going down into the sea in a controlled dive. Johnny tells me who the pilot is. I know him. He pulled my leg about the raid in the briefing room and wished me luck. Well, good luck to you now. The Spitfires are fussing about us more than ever. Some of them seem to be flying sideways and others belly first.

"**4.20 p.m.** No sign of England yet. I wonder how long before we're out of the Hun fighter zone.

"**4.29 p.m.** England. Down a bit and it's warmer. I never felt better. I suppose it's the oxygen.

"**4.50 p.m.** We're landing."

The fighters know their job

Every Boston carries a camera which takes pictures automatically —one every few seconds. It is switched on by the observer, and thus a complete pictorial record of the run up, release of the bombs and the spot where they fell can be made. The photographs are at once developed, and are available two hours later. No claims to have hit the target are allowed without such evidence, which is examined with the greatest eagerness by the crews who have taken part in the attack.

Up to 15th May, 1942, one hundred and forty attacks with fighter escort have been made by aircraft of Bomber Command. The object of these daylight attacks is not only to inflict material damage but also to keep the *Luftwaffe* busy. This aim has so far been successfully accomplished. The German Air Force evidently feels unable to allow British bombers to fly unchallenged over the ill-gotten gains of their master. Its fighters swarm to the attack, and then they find the Spitfires of Fighter Command awaiting them. Combat is joined. The prize is the formation of bombers moving steadily through the shell bursts to their target and thence back

Digitized by Google

to England. Rarely is it attained. The Spitfire defence is very good and most stoutly maintained. The bomber pilots have the utmost confidence in their comrades of Fighter Command, and it is based not merely on belief in their resource and sagacity but on what they see with their own eyes. "The fighters knew their job. . . . They were grand. . . . Wizard fighting. . . ." Expressions such as these fall often from the lips of the bomber crews during their interrogation and in the mess afterwards. They should know.

10. BOMBER COMMAND BUILDS UP ITS STRENGTH

ATTACKS ON objectives in France have also been carried out by night. The damage inflicted by Bostons on the Matford factory at Poissy on the afternoon of 8th March was increased by Whitleys and Wellingtons on the night of 1st/2nd April and by Wellingtons and Stirlings on 2nd/3rd April. Production—about 1,000 lorries a month—has almost, if not entirely, ceased. Before that, a heavy raid on 3rd/4th March had been carried out on the Renault works at Billancourt on the outskirts of Paris. A strong force, a high proportion of it being composed of Stirlings and Halifaxes, dropped 457 tons of bombs on the factory in 110 minutes. It had been in full production for our enemies for some time and had been turning out 100 tanks and 200 lorries a month, and 150 aircraft engines a week, besides diesel and petrol engines and aircraft components.

The attack, delivered in moonlight, can only be described as devastating. The works have been rendered useless for many months. It was a striking and terrible example of what can be achieved by a heavy force concentrated on a small and vital target easily seen and, in this case, ill-defended. Though the exact target, for obvious reasons, had not been specified in the frequent warnings sent out by us over the radio, neither the French nor the Germans could have been in ignorance of our intentions. Yet the opposition met with by our bombers was negligible.

Other attacks on targets of a similar nature in France have been the three delivered against the Gnome and Rhône works and the Goodrich Tyre works at Gennevilliers on the nights of 5th/6th April, 29th/30th April and 29th/30th May. Here, too, the damage has

Digitized by Google

been very considerable. But here the defences were more active. The wireless operator of a Whitley had a narrow escape during the first attack. A piece of shell knocked his torch from his hand as he was picking up a flare.

The attacks on French targets have gone on steadily, 21 having been delivered in May last by day and night. They will continue so long as the Germans seek profit from what they have stolen and aid from those whom they have enslaved.

New tactics in attack

The intensity of operations at night began to take an upward curve towards the middle of February. Before then Bomber Command had, of course, not been idle. In January, in addition to heavy attacks on Brest, Wilhelmshaven, Bremen, Emden and Kiel, which were directly connected with the Battle of the Atlantic, Munster was attacked twice on 22nd and 28th January, Hanover on the 26th and Mannheim on 11th and 14th February. Objectives in these cities were the principal targets among several others in North-Western Germany. A new technique was employed, its chief characteristic being the concentration of large numbers of bombers for a short time over a single target. The effect of this has so far been, if not to paralyse, at least to dislocate the ground and A.R.P. defences.

The first example of these new tactics was the attack on the Renault works on 3rd/4th March. In March and April the Ruhr suffered eight heavy raids in which 1,555 aircraft took part, besides three small attacks. In the same period Cologne was visited four times by a total of 559 aircraft. The hurt caused to this city was considerable. By the end of April, in the Nippes district—an industrial part of the town—about 75,000 square yards occupied by workshops had been damaged. Heavy bombs had completely destroyed buildings near by covering an area of 6,000 square yards. The Franz Clouth rubber works, covering 168,000 square yards, had been rendered useless, much of them being level with the ground. To the East of the Rhine a chemical factory and buildings beside it, occupying 37,500 square yards, was almost entirely destroyed. Severe damage had also been caused to the centre of the city. All this was confirmed by the evidence of photographs.

Dortmund was twice heavily bombed, on 14/15th April, and again on the next night, a group of factories in the Weissenburger Strasse being extensively damaged. Hamburg endured five raids, those on 8th/9th April and 17th/18th April being especially severe.

Digitized by Google

A particularly effective raid was made on Lubeck, the old Hanseatic port, on 28th/29th March. 304 tons of bombs were dropped in 180 minutes. Soon after the attack began at 10.30 p.m., one crew reported that there were a few small fires. Twenty minutes later others reported that the fires seemed to have spread right across the island on which the old part of the town is situated. The greater part of it was burnt to the ground. Great quantities of stores accumulated during the winter for use in the Russian campaign were destroyed.

Fires raged in Rostock

The next targets to suffer severely were Rostock, bombed four nights running from 23rd to 26th April, and Warnemunde, attacked on 8th/9th May. Rostock is the home of a big group of aircraft factories forming part of the great Heinkel concern. In the first attack the concentration was very heavy, all the bombs falling within the space of an hour. From about 2.0 a.m. onwards, fires raged in the harbour and the Heinkel works, and smoke presently rose to a height of 8,000 feet. The navigator of a Lancaster arriving towards the end of the raid told his captain that the fire he saw seemed "too good to be true" and that it was probably a very large dummy. Closer investigation showed that it was in the midst of the Heinkel works, and the Lancaster's heavy load of high explosives was dropped upon it from a height of 3,500 feet. Damage to the factory was considerable. The walls of the largest Assembly Shed fell in and destroyed all the partially finished aircraft within. Two engineering sheds were burnt out, and in the dock area five warehouses were destroyed by fire and seven cranes fell into the dock. By the end of the fourth attack two large areas of devastation had been caused in the old town. All the station buildings of the Friederich Franz Station had been gutted and the Navigational School and the town's gasworks destroyed. Photographs taken in daylight after the second attack on Rostock show swarms of black dots near the main entrance to the station and thick upon two of its platforms. These were persons seeking trains to take them away from the devastated city.

After the attacks on Rostock came those on Stuttgart, carried out on 4th and 5th May and on Mannheim on the night of the 19th/20th. Mannheim is the second largest inland port in Europe. Its docks are continually full of raw materials, tank parts, armour plating and other war supplies, which come to them down the Rhine from the Ruhr. There are also many industrial plants

Digitized by Google

situated in or near the city. In this attack one detachment of Stirlings dropped more than 40,000 incendiary bombs, which left many fires alight.

The foregoing is a specimen page in the catalogue of attacks made and damage slowly but surely being inflicted on the Germans. It is not an exhaustive list. Nor is it final. Little by little Bomber Command has been building up its strength. Hampered by the weather it stuck to its task throughout last autumn and winter. Since the beginning of the war it has been a hammer in the hands of this country, which is using it to batter the walls of Germany. Slowly that hammer has grown in size and weight. On the night of 30th/31st May, 1942, it was swung with deadly effect. On that night 1,043 aircraft of Bomber Command attacked Cologne for an hour and a half. So large a force had never yet been used by any country in a single attack.

11. THE MEN ON THE GROUND PREPARE

THIS ATTACK was the culmination of months of training, weeks of planning and days of organisation; but it was only the beginning of an intensified effort which will cause the Germans, in the words of Air Marshal Sir Arthur Harris, the Air Officer Commanding-in-Chief, Bomber Command, "to look back to the days of Lubeck, Rostock and Cologne as men lost in a raging typhoon remember the gentle zephyrs of a past summer."

Days of organisation—they were full and strenuous. The ground staffs worked as never before. It is appropriate at this point to give some explanation of their labours, for without the expert and unremitting toil of the electricians, fitters, riggers and armourers, and of the repair and maintenance parties provided by the firms which build the aircraft, no bomber would be able to take the air.

Let us once again take the Wellington as an example. Each day a thorough inspection of both engines and the airframe is carried out by the ground crew responsible for it. The ground crew normally consists of a fitter for each engine, and two fitters or riggers who attend the airframe. The ancillary equipment, such as the instruments, electrical gear, guns and so forth, are all checked by specialists in each trade. When all have finished—the inspection

Digitized by Google

may take two hours—the aircraft is certified airworthy on the proper form. This form is a log containing the details of each daily inspection, and every "tradesman" initials the column in which his part of the inspection has been recorded. The aircraft is not allowed to leave the ground until every column has been so initialled. Its crew, who will be flying in it on operations that night, then take it over and carry out a night flying test during which all the work of the ground crew is put to the test in the air. On landing, any complaints are entered in a book, usually known as the "flight snag book," and immediately set right by the waiting ground crew.

During the remainder of the day, before the aircraft takes off for its target, the fitters, riggers and other "tradesmen" prepare it for its special task. The riggers apply de-icing paste to the leading edges of the wings and of the tail plane and to the propellers. The paste applied to the propellers looks not unlike the thick cream used by actors when removing their make-up. It is spread on the leading edge, and as the blades revolve, a thin film is formed which covers them. The electricians test all the electrical equipment and the condition of the storage batteries. The armourer checks the hydraulic turret system for oil leaks, while the air gunner himself sights the guns.

If the turret is a four-gun turret it is trained on a target bearing four discs painted green, red, blue and brown on its surface, with a smaller yellow disc in their midst. The four discs are arranged on the target according to a pattern worked out in practice so as to provide the most effective cone of fire. Each gun is sighted in turn on one of the discs, the fitter standing outside the turret and moving the barrel of the gun in accordance with the instructions of the air gunner inside. The fitter and gunner then put the ammunition belts back into place. In modern bombers they run lengthwise along the fuselage to the ammunition pans situated about half-way down it. While this is being done, the armourers are fitting the bombs to the bomb beams, the tanks are refilled and the aircraft is now ready to take part in the night's operations. Just before the take-off, the Engineer Officer of the Station visits each aircraft and carries out a general check to ensure that it is absolutely ready.

In addition to servicing the aircraft, the Servicing Flight also change engines, fit and repair airframes, maintain the rubber dinghies in good condition, and fit out the new aircraft when they are delivered from the factory. Every forty hours each aircraft undergoes a special inspection, when it is thoroughly examined.

In addition to the Royal Air Force personnel who form the

Digitized by Google

ground crews, there is at each Station a repair party made up of staff belonging to the firm manufacturing the type of aircraft with which the squadrons at the Station are armed. With Wellingtons these men are the employees of the firm of Vickers Armstrong. There are some twelve of them to a station. All are experts, and each man is capable of performing the work of the others. Their work differs from that of the ground crews, for it is their task to carry out major repairs. They can deal with anything which does not require a "jig" to set right. They can change a wing, or put in a new section of geodetics to take the place of a damaged section. Only when, for example, the fuselage has been twisted out of alignment, must the aircraft be sent back to the works.

Happy band of experts

The spirit of these civilian workers can be compared only with that of their colleagues in uniform. All work, if necessary, a seven-day week, and the hours of each day's labour are determined, not by any set rules, but by the amount of work to be done. Only when there is nothing more left to do will they relax. They work in all weathers. The repair party is perhaps luckier than the ground crews for they deal with damaged aircraft in hangars, while the ground crew service M for Mother or P for Peter far out beyond the edge of the great perimeter of the aerodrome. They live, for the most part, in Nissen huts near to their work, cut off for many hours from the central life of the Station. This isolation seems to strengthen their strong sense of duty. Each man in each ground crew regards his own particular "kite" with the esteem—it is almost possible to say the affection—which the groom has for his horse.

They seem a singularly happy band of men, perhaps because in an age of mechanism it is their good fortune to have to do with mechanical things. Their mouths are full of a language of their own, in which expressive slang and the Greek and Latin hybrids used by modern engineers mix and mingle. The mid-under turret is the "Dustbin"; the pilot's cabin is the "Greenhouse"; while the Astro Dome, from which observations of the heavenly bodies are made, is known as the "Observatory." The 4,000-lb. bomb in the racks beneath is called "the Big Noise"; the workers, who deal with the instruments, are known as "Clock Bashers"; an airman in charge of a gang as the "King Pin." A recruit is a "sprog," a W.A.A.F. officer a "ladybird."

It was upon men such as these that was placed the burden of preparing the aircraft used in the undertaking against Cologne.

Digitized by Google

They proved equal, and more than equal, to the strain. To put more than a thousand bombers into the air in one night meant the use of a large number of Stations in each Group of the Command. At each of them the ground crews were very busy for several days before. Their routine work was intensified and they had much extra work, for they found themselves with an increasing number of aircraft to be made ready.

Special effort for a special job

Here is what happened on a Station from which Wellingtons have operated since the beginning of our bombing campaign. It was one of the many in action that night and is typical of all. A few days before the attack, the Station Commander informed his Engineer Officer that a maximum number of aircraft would be required for a certain night, and asked that at least 36 should be prepared. During the next few days Wellingtons kept coming in and the number on the Station gradually grew. The Station Engineer Officer held conferences with the Squadron Engineer Officers and then told the ground crews what was in the wind. "I could only say," he reports, "that we were to make a special effort for a special job and that we were to put out everything with wheels on. . . . Soon the enthusiasm began to spread. All trades concerned got the fever and work went on every day until midnight and began again at 6.30 the next morning. The aircraft wanted for nothing. If spares were not available on the Station, then we found out where they were to be had and soon our 'Tiger Moth' was battling through rain and storms to bring back the goods."

Nothing was left to chance. The ground crews, numbering about 200, worked eighteen hours a day for five days, fitting and testing every detail—engines, armament, electrical gear, instruments and other equipment. "As I went round I was repeatedly asked, 'How do we stand now, sir? Have we time to get through another eighty hours' inspection?' " As a result 44 Wellingtons took off at dusk on 30th May for their targets in Cologne. While the armourers were still bombing up, the crews attended the briefing at 6.0 o'clock. It was then that they were informed what the target was and heard a message from the Commander-in-Chief. "Press home your attack," it ended, "to your precise objective with the utmost determination and resolution in the foreknowledge that, if you individually succeed, the most shattering and devastating blow will have been delivered against the very vitals of the enemy. Let him have it—right on the chin."

Digitized by Google

12. THE HAMMER FALLS: ONE THOUSAND BOMBERS OVER COLOGNE

AT THE HOUR of the take-off, the whole staff of the Station was assembled round the aerodrome. The aircraft were sent off by the Station Commander himself. Two flare-paths were laid and the Wellingtons were dispatched, with only 300 yards between them, simultaneously from both paths. The first eleven got away in eight minutes. Some miles to the North, 43 Halifaxes became airborne a little later. A few miles to the East, an Air Vice-Marshal climbed into a Stirling and took his seat as second pilot. Scenes such as these were being played throughout the length and breadth of Eastern England as the late dusk of that May day faded into night.

The Wellingtons arrived first over Cologne, followed closely by the Stirlings. "When we got there," said the Wing Commander of a squadron of Wellingtons, "we saw many fires which had not yet taken real hold, but I thought it had all the makings of a successful raid. It was easy enough to see the city, for we could pick out the Rhine and the bridges quite clearly. There was little or no opposition over the target, I think because there were so many aircraft that the ground defences could not cope with them. We did meet with opposition on the outskirts but it was very indiscriminate. Before I left I saw the fires growing larger and larger."

It was then that the Stirlings arrived on the scene. Flying with them was Air Vice-Marshal Baldwin, commanding the Group to which they belong. "The weather forecast," he said, "made it uncertain almost up to the last moment whether we should start. We had not been flying very long before we met much low cloud, and this depressed me. The front gunner got a pin-point on an island off the Dutch coast but the weather was still somewhat thick and there was an Alpine range of cloud to starboard. Suddenly, thirty or forty miles from Cologne, I saw the ground and then the flak. It grew clearer and clearer until, near the city, visibility was perfect. First I saw a lake, gleaming in the moonlight, then I could see fires beginning to glow, and then searchlights which wavered and flak coming up in a haphazard manner.

"The sky was full of aircraft all heading for Cologne. I made out Wellingtons, Hampdens, a Whitley and other Stirlings. We sheered off the city for a moment, while the captain decided what would be the best way into the target. It was then that I caught sight of the

Digitized by Google

twin towers of Cologne cathedral, silhouetted against the light of three huge fires that looked as though they were streaming from open blast furnaces. We went in to bomb, having for company a Wellington to starboard and another Stirling to port. Coming out we circled the flak barrage and it was eight minutes after bombing that we set course for home. Looking back, the fires seemed like rising suns and this effect became more pronounced as we drew further away. Then, with the searchlights rising from the fires, it seemed that we were leaving behind us a huge representation of the Japanese banner. Within nine minutes of the coast, we circled to take a last look. The fires then resembled distant volcanoes."

Extreme devastation

When the Halifaxes arrived, the raid had lasted for an hour. By this time Cologne was visible to late comers sixty miles away, first as a dull red glow over a large area of ground. The captain of one Halifax had the same experience as the observer of the Lancaster over Rostock. He and his navigator thought that the fire towards which they were flying was too large to be anything but a specially elaborate dummy. The pilot of another Halifax thought that a heath or a whole forest must be blazing. Ten miles off, however, they perceived that the glow came from a town on fire, and as they drew near they could see more and more loads of incendiaries burning in long, narrow rectangles made up of pin points of bright, white patch, which swiftly blossomed each into a rose of fire. Like the others, the Halifaxes identified the target easily by means of the bridges over the Rhine.

One captain reported: "So vast was the burning that ordinary fires on the outskirts of the city or outside it, which I should usually have described as very big, looked quite unimportant. It was strange to see the flames reflected on our aircraft. It looked at times as though we were on fire ourselves, with the red glow dancing up and down the wings."

For several days reconnaissance aircraft were unable to obtain photographs of the city. The smoke of the burning was too thick. It was not until 5th June that good pictures were taken. When they were examined, the damage revealed was seen to be very great. It may be of interest to compare the extreme devastation caused to Cologne on the one night of 30th/31st May with that described in broad outline on page 43, which was the result of the four previous raids.

Cologne is a city of nearly 800,000 inhabitants and is the third largest in Germany. The total area of complete destruction caused

Digitized by Google

on 30th/31st May amounts to 2,904,000 square yards, which may be compared with the 286,500 square yards damaged or destroyed in the four previous attacks. Of the area laid waste that night, about half is situated in the centre of the city. The cathedral appears to be unscathed except for damage to windows; but 250 factory buildings and workshops were either destroyed or seriously damaged. A significant feature of the photographs taken on 5th June is that they reveal what appears to be a dead city. An air-raid warning, which was doubtless sounded, would have cleared the streets while the photographs were being taken; but it is significant that there is absolutely no transport visible—no trains, trams, 'buses or motor cars. The casualties among the population were certainly heavy. All the public utility services were interrupted, for how long it is not yet possible to say.

The attack on Cologne of 30th/31st May was followed two nights later by an attack in much the same force on the Ruhr. Here, too, enormous fires were caused and the damage was very great. In these large raids our loss was under four per cent. of the aircraft used. In the attack on the Ruhr a Halifax was caught over Essen by searchlights and heavily shelled. The port outer engine was put out of action and the aircraft held for fifteen minutes in a cone of fifty searchlights. A shell splinter broke the window in front of the captain and blinded him in one eye. On the way home an Me. 110 attacked the crippled bomber, but the rear gunner drove off the German, setting its starboard engine aflame. Near Dunkirk, searchlights once more picked up the Halifax and flak knocked out the inner starboard engine. The bomber got back on two engines.

On the night after this, the Ruhr was again attacked. On the next night Bremen, then a night's pause, then the Ruhr again, then Emden, then on 25th/26th June another thousand to Bremen. So it goes on. . . .

13. THE BLOW STRIKES HOME

WHAT EFFECT are the sustained attacks by Bomber Command producing on the enemy? The answer to this question, under eager discussion in the public prints and resorts of this country and elsewhere, cannot yet be given with certainty. It is possible, by the examination of photographs and by other means, to arrive at an estimate of the material damage they are causing. Some examples of it have been included in this account.

Digitized by Google

Of an importance as great, if not greater, are two other effects. The assaults of Bomber Command which, despite the most evil weather of last autumn and winter, have steadily increased, have kept in the Western theatre of war a growing proportion of the German A.A. defences, both ground and fighters. A shortage of searchlights and A.A. guns was being felt on the Russian front as early as November 1941; and as the attacks have continued, the Germans have found it necessary to reorganise the ground defences, which are now manned by more than 1,000,000 men. A high proportion of these have had to be kept in the Ruhr, in Northern France and elsewhere to ward off our bombers and fighters, if they can, though they are urgently needed to support the hard-pressed Luftwaffe at grips with the Russians from the White to the Black Sea. Moreover, it has been necessary for the Germans to recruit and maintain a huge A.R.P. system with an army of firemen, Observer Corps personnel and others, and this at a time when the supply of men to the factory and the field is becoming a problem more and more difficult to solve. Germany's labour troubles are also increased by the amount of labour she must employ in repairing damaged houses and in constructing an elaborate system of dummies and decoys.

There is also German morale to be considered. It is a strange plant, more sensitive perhaps than is sometimes imagined. In the Nazi greenhouse, where the promise-crammed air is kept at a high temperature by the ceaseless attention of Goebbels to the propaganda furnaces, it grows well and even expands; but when the panes of the greenhouses are broken by the bombs of the Royal Air Force, it wilts and droops away, one day to expire.

In July, August and September of 1941 German morale, especially in Hamburg and Cologne, had recovered and was good. In Munster close by, where, it was said, 3,000 people had been killed in air raids it was poor. The raids of 7th/8th September and 7th/8th November on Berlin lowered morale for some time in the capital, and there were stories current in the streets and cafes of the effect of our 4,000-lb. bombs—their explosion was said to have caused many cases of burst lungs. The Berliners had time to recover during the winter.

Morale in Lubeck and Rostock fell to a very low level after the heavy and destructive attacks made on them in March and April of this year. Evacuation of both towns was on a large scale, especially in Rostock. The population of the Ruhr is becoming increasingly uneasy. It would appear that there is a tendency to quit the towns, for orders have been issued forbidding workers to move

Digitized by Google

more than ten kilometres from their place of employment. In March and April the Ruhr newspapers published warnings against the spreading of rumours in which, they said, the number of air raid casualties was grossly exaggerated. It was the duty of every good citizen to refrain from such talk. The most common rumour appears to have been that the relief organisations and the Nazi Party were slack in coming to the aid of persons trapped in cellars, with the result that mortality had been high.

Stout hearts or concrete shelters?

In Kiel, too, all was far from well in the spring, and there is no reason to suppose that morale has since improved. The *Kieler Neueste Nachrichten* for April 2nd is of interest. "The best protection for a soldier is a stout heart not a concrete shelter," it says, quoting a saying of Admiral von Schroeder, and then continues: "The same applies to the civil population. It is no wonder that our town, the Reich naval base of Kiel, is frequently a target for the R.A.F. The fate of those who suffer is hard enough: if they escape death they lose their property. And they do put up with their lot, for Germans are resolute and can take it. Usually, however, it is the other people who eternally moan and complain.

"To them the British civil population may be held up as an example. . . . But who would like the enemy to be held up to him as an example? When the enemy, for example, broadcasts that the British bombers had to fly through a 'curtain of steel' and that during the attack on Kiel on the night of 13th March eight bombers were lost, such news should be heard with satisfaction. Instead, after every raid gossip-mongers of both sexes run round the town, not only to see the enemy's work of destruction—which is heartless and undignified—but also to spread rumours, one more foolish than the other. Loss of life is multiplied tenfold, or it is said that the heavy flak has been removed from the town. . . .

"A little thought should convince these gossip-mongers that it is not possible to move the flak when the guns are fixed, as in Kiel. Such people are stupid enough, and apparently have time to run round the town spreading rumours. They should be given more useful work to do. The busy man has no time for such highly superfluous and extravagant activity. He despises it. Therefore, more dignity, more resolution, and above all a stout heart; for we must expect many more air attacks on Germany and on our town."

German writers and broadcasters have lately been expressing their conviction that the offensive of Bomber Command cannot be

Digitized by Google

sustained indefinitely. Other authorities, however, do not seem to be so optimistic. In Essen, for example the War Damage Bureau has been divided up into twelve separate bureaux in view of "the serious consequences for the civilian population of British attacks."

When an air raid alert sounds in Germany, almost everyone is sent at once to the shelters. This is another factor which affects morale. Much loss of sleep results, with consequent absenteeism which is increased by the steadily mounting casualties to houses. A worker without a home is usually unable or unwilling, or both, to give of his best day after day in the task of furthering the war effort.

The oppressed stirred to action

In addition to native German workers, there are some two million foreign workers drawn from the many nations which have the misfortune to enjoy the protection or friendship of the *Herrenvolk*. These, too, are a source of low morale. The "go slow" movement is spreading, especially in France and other countries exposed to the attacks of the Royal Air Force. Workers in factories which have not yet been attacked fear that their turn will come, and are beginning to lend a more and more attentive ear to the radio and to the pamphlets showered upon them, which exhort them to do as little as possible for their masters.

Pamphlet dropping over Occupied Countries and over the territory of the Reich has increased substantially of late. This form of propaganda should find a fruitful field in France, where the accession to power of Pierre Laval has brought opposing political views into sharp conflict. Restlessness, always considerable, is growing in Holland, Belgium and Norway. Acts of sabotage and other forms of resistance are on the increase, and this seems to show that the shooting of hostages is not proving a deterrent. Portraits of the Dutch Royal Family dropped on Holland have been collected and treasured by its gallant inhabitants. *The Courrier de l'Air*, a small illustrated French booklet, falls frequently on France and serves to keep the French informed of the true facts about the war. Thus Bomber Command is taking a hand in political warfare—playing the role of a postman who delivers the letters at the risk of his life. About 250 million leaflets have been dropped on Germany and the Occupied Countries from the beginning of the war to the middle of May, 1942.

Those in authority in Germany have also to consider the effect of our bombing offensive on the minds of the men at the front—more especially the Russian front. There is evidence that they do

Digitized by Google

so. Germans are exhorted to write in a cheerful strain to their fathers, husbands or brothers not yet in Leningrad or Moscow. As the civilian casualties mount, as mount they must, the fighting men are beginning to wonder and then to worry and, when no letter comes, to remember that towns and cities are built not only of insentient brick but also of living stones, and it is not they alone, but their home and family—that *Heimat* so beloved of the Teutonic heart—which may be in jeopardy.

Finally, there is the shaken faith of the German people in the might and power of the Luftwaffe. For two and a half years it has been dinned into their heads that the German Air Force is invincible. Faith in this dictum—axiom is perhaps the word—was shaken somewhat after the Battle of Britain, but was fully restored when Greece and Jugoslavia were overpowered and Crete captured. The Luftwaffe's failure to annihilate the Russian Air Force revived certain doubts; and now the German public has been bluntly informed by, among others, the editor of the *Frankfurter Zeitung* that its air force cannot retaliate on Great Britain because "its forces are scattered from Africa to Norway and on the Russian front."

To estimate the morale of the enemy under bombing attacks is always difficult. In general it can safely be said that, as German morale falls, that in the Occupied Countries rises. This is not the platitude it may appear to be. Both oppressors and oppressed are being bombed—the former certainly more severely—but in the abodes of the guilty each bomb is becoming a symbol, if not of approaching doom, at least of the might of a foe as yet unsubdued, while in France, Belgium, Holland and Norway, it is a harbinger of deliverance.

They shall be utterly discomfited

Bomber Command is in the midst of a great and sustained offensive which began on the second day of the war. This attack has passed, and will continue to pass, through periods of varying but steadily mounting intensity. It began modestly against German warships with bombs and German citizens with pamphlets. Its efforts increased when Norway was overcome in April 1940, and its aircraft had to fly seven or eight hundred miles there and back to attack the invaders. During the German onslaught on Holland, Belgium and France its whole strength engaged the enemy ever more closely and suffered very heavy losses. Its attacks later in the year on the invasion ports made when the Battle of Britain was in full swing,

Digitized by Google

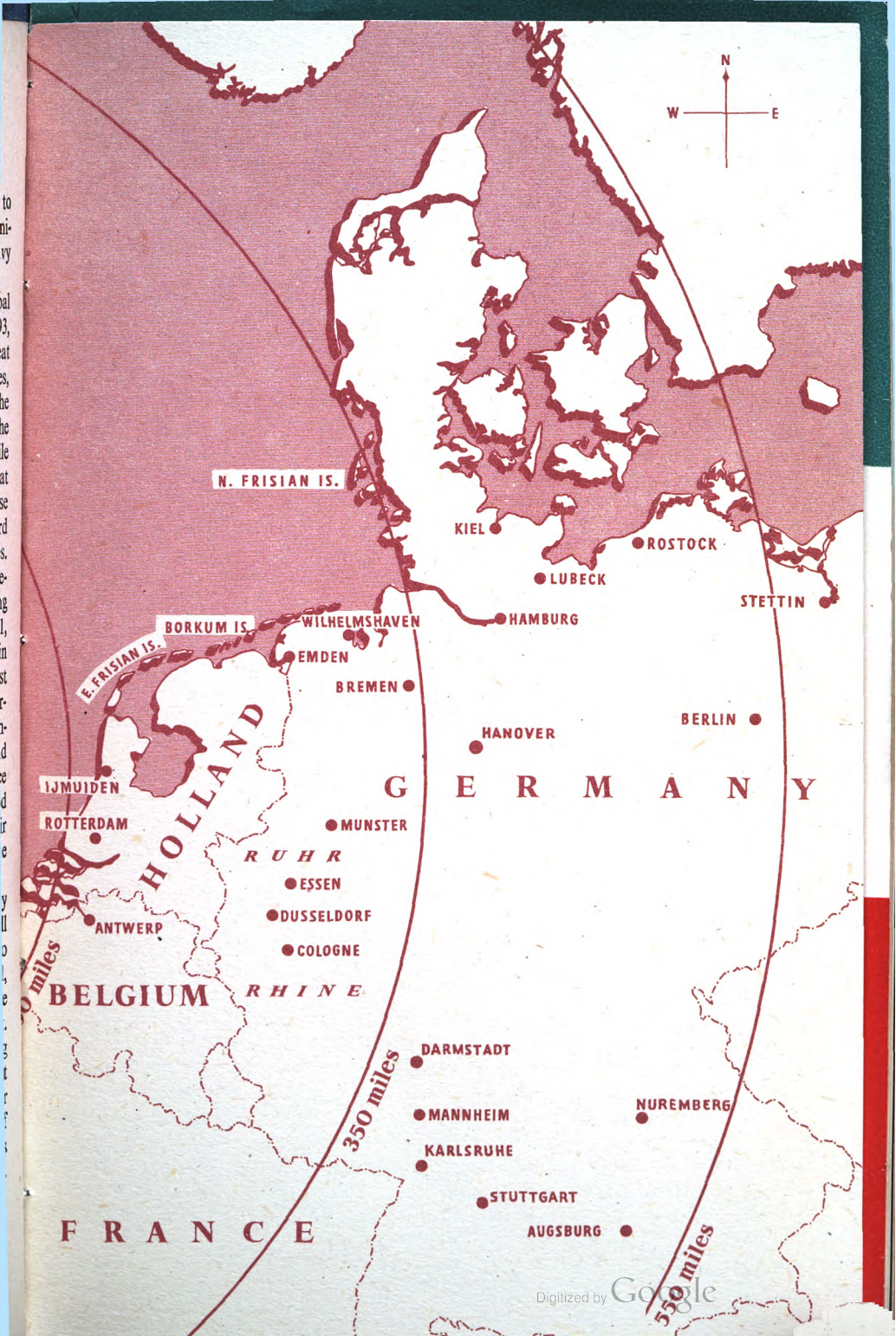
were such that the three thousand barges collected never put out to sea. It then began its assaults on German industry and communications which it has maintained on a fluctuating and now heavy scale for more than two years.

Between 11th May, 1940, and 31st May, 1942, of the principal targets in the Ruhr, Essen has been attacked 89 times, Duisberg 93, and Dortmund 33. Of the main German cities outside that great industrial area, Bomber Command has been to Cologne 144 times, to Mannheim 68, to Hannover 64 and to Magdeburg 26. The four German ports most directly concerned with the Battle of the Atlantic are Bremen, Wilhelmshaven, Kiel and Emden, while Hamburg, the second city in Germany, is a base not only for that battle but also for the Russian front. Targets in the first of these cities have been attacked 110 times, in the second 88, in the third 82, and in the fourth 82. Hamburg has been attacked 115 times.

All this Bomber Command has accomplished with aircraft designed and built in Great Britain. With the exception of the Flying Fortresses, which operated for a short time in the summer of 1941, no aircraft other than British-built has as yet bombed targets in Germany, though American Bostons have been engaged against targets in occupied countries since March 1942. It was British Aircraft—Wellingtons, Hampdens, Whitleys, Stirlings, Halifaxes, Manchesters and Lancasters—which bombed Cologne, the Ruhr and Bremen a thousand strong. If so much can be achieved by a force armed with British aircraft manned nearly all of them by British and Empire crews, it is surely possible to hope great things when the Air Force of America begins to fly side by side with them towards the same targets.

This is an interim report. The deeds, of which it is a summary record, began before the period of time it covers, and will doubtless continue long after it has appeared in print. Those who are performing them, the pilots and crews of Bomber Command, engage upon their stern duty with a resolution as stern. They have much to face and to endure. The enemy is not defeated—yet. He is certainly no longer exultant. It may be that he is beginning to feel doubtful what the end will be. His moods, however, do not matter to them. They live their secluded, their dangerous, their consecrated lives for one purpose—his utter discomfiture. One of them, back from Stettin on the far Baltic, once ordered his gunners to fire a salute to the English dawn as it came up out of the sea. That was a symbol of victory.

Digitized by Google



Digitized by Google

BOMBER COMMAND CONTINUES

is the Air Ministry account

of a growing assault

at the heart of the enemy.

Beginning June 1941, it tells of

the men and their aircraft,

daylight sorties

and night operations.

It ends with the 1000-bomber raids

on Cologne and the Ruhr.

7d
NET

Digitized by Google

HANDBOOK ON PERSIA

SPECIMEN OF BRITISH
LITERATURE SUPPLIED
RECORD PURPOSES ONLY.

UNIVERSITY OF CALIFORNIA
LIBRARY
SEP 3 1943
DOCUMENTS DIVISION

Digitized by Google

Digitized by Google

HANDBOOK ON PERSIA

Prepared for the War Office
by the Ministry of Information for the use of
British troops in Persia

Digitized by Google

Contents

PERSIA	*Page*	3
GEOGRAPHY AND CLIMATE		5
THE PEOPLE		6
THE PRINCIPAL CITIES		6
THE GOVERNMENT		6
ADMINISTRATION		7
THE PERSIAN LANGUAGE		7
THE ROAD SYSTEM OF PERSIA		8
THE TRANS-PERSIAN RAILWAY		8
INDUSTRIES		9
OIL		9
THE FOOD SITUATION : AGRICULTURE		9
LANDLORD AND PEASANT : POVERTY		10
BAZAARS		11
PERSIAN HOUSES		11
RELIGIONS		12
SOME PERSIAN CUSTOMS		13
HOW TO BEHAVE TOWARDS PERSIANS		14
THE PERSIAN CALENDAR		16
COINAGE		16
WEIGHTS AND MEASURES USED IN PERSIA		16

Digitized by Google

PERSIA

You are going to visit Iran, which we call Persia, and it is essential that you should know at least something about the country and its people. Although it is not at war with the Axis, Persia has been the ally of Great Britain and Soviet Russia since January 1942. You will be the guest of a foreign country; what is more, of an Allied country; and as such you will naturally pay the greatest respect to the feelings, rights, property and customs of your Persian hosts.

PERSIA is one of the most ancient countries of the East. When Britain was inhabited by barbarous tribes who painted their bodies blue, the people of Persia were civilised and lettered, lived in splendid cities and were ruled by kings who were among the wisest and most powerful monarchs of their age. During its long history Persia has been conquered many times, but it has always absorbed its conquerors and kept its identity intact throughout the centuries. With Egypt and China, Persia is one of the oldest survivors among the family of nations. The antiquity, the history and the literary and artistic achievements of Persia entitle this country to a European's respect. The courtesy and hospitality of the Persian people will impress you, for few nations set a higher value on good manners or respond more readily to kindness and good humour. You may find, however, that many Persians in the towns view you with suspicion or resentment. The existence of such feelings is a tribute to the skill of Axis propagandists, who have managed to persuade many Persians that they could have stayed out of the war entirely if the Allies had not sent troops into their country in August 1941, and that the Allies are responsible for their present economic difficulties. It is true that the presence of foreign troops has contributed towards the rise in prices, but many Persians

Digitized by Google

still do not realise that we have imported many thousands of tons of wheat and sugar into their country, which normally grows enough wheat for its own needs. Instead, they believe the Axis broadcasts, which maintain that the Allied troops are living off Persia's wheat while they starve. You have therefore a special responsibility in Persia for showing these people by your example how wrong their new ideas of the British really are.

You will want to know how the Allies and you yourself come to be in Persia at all. To explain this we must go back to 1918. The Four Years War left Persia poor and disintegrated. The Qajar dynasty, which still occupied the Peacock Throne, was unpopular and ineffectual. In 1925 an officer of the Persian Cossack Brigade, Reza Pahlevi, for some years the most powerful man in Persia, got himself elected Shah by the Persian Parliament in place of the Qajar monarch who had left the country a year before. Reza Pahlevi proceeded to set up a dictatorship. He was forceful and intensely anti-foreign and, whatever his faults in the later years of his reign, no one can deny his outstanding ability and energy. Elsewhere in this handbook you will read of his achievements—the Trans-Persian Railway, the creation of a Persian army, the settlement of nomadic tribesmen, the building of many roads, the restoration of order and security throughout the country, and finally the fusing of the diverse elements in Persia into some sort of national unity. These changes naturally aroused considerable opposition in the country and in his later years Reza Shah became more and more unpopular. His internal policy was largely modelled on German lines, and his economic and cultural relations with Germany became more and more intimate. On the outbreak of war in 1939 a well-organised German colony already existed in Persia. From 1939 to 1941 this colony grew larger, and its grip upon Persia's industrial life became more complete. When Germany attacked Russia in the summer of 1941 (and Persians found that Britain and Russia had become Allies), the Russians and ourselves made repeated representations to the Persian Government upon the dangers of German activities in Persia. The Shah's government prevaricated. At length on August 25th, 1941, we and the Russians marched in, expelled the German colony and began to use the roads and railways as supply routes to Russia. Within three days of the Allied entry the Persian army ceased resistance. Within three weeks the Shah had abdicated in favour of his son.

The main purpose of our presence in Persia is to send supplies by Persian routes to the U.S.S.R., to protect the vital oil-wells and oil-refineries in the South, and to protect Persia from Axis aggression. You are in a very real sense protecting the interests of the Persians as well as those of Great Britain and Russia ; but do not expect all Persians to realise this.

Digitized by Google

You must not forget that the events of August 1941 were painful to the dignity and pride of the Persian army and people ; and, now that they have entered into an alliance with us, you must do all that you can by your conduct and bearing to help them to see that our action was not directed against the Persian people. Clever Axis propaganda has coaxed the Persians to regard Germany as the one friend of their country in a greedy world. Occupied Europe is too distant for the average Persian to be greatly impressed by its sufferings : he is more concerned with his own discomforts and afflictions such as shortage of bread, rise in prices and so on. And the fact that these are the inevitable consequences of the world war does not reconcile him to them any the more easily.

GEOGRAPHY AND CLIMATE

PERSIA is as large as the German Reich, France, Italy and Great Britain put together. This vast area is divided into two distinct kinds of country—the Plateau and the Coastal Belt. The Plateau is dry and lies two to six thousand feet above sea-level, cut up by mountain ranges. The climate is clear and bracing. The winter climate is not unlike that of Switzerland—cold but sunny, with fairly heavy falls of snow and rain. The spring comes relatively early and practically no rain falls from May to October. Summers are hot but not unbearably so and the summer nights are clear, starlit and cool.

Mountains fringe the great Plateau and separate it from the Coastal Belt, which is very different country. The coast facing the Indian Ocean is one of the hottest and most forbidding regions on earth ; very little grows there. The coast of the Persian Gulf itself is more fertile ; while on the southern shores of the Caspian Sea rainfall is heavy and trees and vegetation are abundant. One half of the total area of the Plateau is salt or sandy desert. The two main deserts are the Dasht-i-Kevir or Great Salt Desert in North Central Persia and the Dasht-i-Lut in the south-east, a sandy desert that stretches between Kerman and Seistah. In addition to these formidable waste lands there are semi-arid areas where the soil is harsh and stony and even sheep cannot find food. The fertile plains of the north-west (the chief agricultural part of the country) are almost waterless, but many of them have been irrigated.

Anywhere on or near the plateau you will always see upon the horizon a jagged line of mountains. The highest peak in Persia is Demavend, the snow-capped cone which overshadows Tehran. Demavend is 18,600 feet high, that is to say three thousand feet higher than the highest peak in Europe, Mont Blanc. Other high peaks are Avalan Dagh (14,000 ft.), one hundred miles east of

Digitized by Google

Tabriz, Elvend (12,290 ft.) overlooking Hamadan; the row of peaks along the Zagros Range in Bakhtiganstan, which you can see on your right as you come down to Shiraz from Isfahan. Away in the east is the remote Kuh-i-Taftan (15,270 ft.), which overlooks British Baluchistan.

Persia has few rivers, indeed only four of any importance at all —Karun, Sefid Rud, Gurgan, Zayandeh-Rud. The Zayandeh-Rud, which flows through Isfahan, empties into the desert and is absorbed in it, like many of the smaller streams.

THE PEOPLE

IN 1932 the population of Persia was estimated at just over 16 millions or nearly twice that of London. In the last ten years this figure for Persia has probably been increased by between one and two millions. Most of the people are of Iranian race, but up in the north-west, in the provinces next to Turkey, they are of Turkish origin and speak Turkish. Tribes speaking Turkish dialects are also found in the south (Fars); while in Khuzistan (also in the south) there are many Arabs. The native speech of the majority of the people is Persian, and it is understood by almost all.

The tribes form a very important element in the Persian population. Many of them, especially in Fars and Baluchistan in the south, as well as those along the western frontiers, are nomads. They winter in the warm valleys or coastal lands, and when summer comes they take their flocks up into the high country, where the air is cool and the grazing good. All the year round they live in tents. A traveller in Fars or in Kurdistan in spring or autumn may come across these tribes on the march: as far as you can see the plain is covered with flocks and herds, pack animals carrying children, old men, black tents and all the household property of these nomads.

THE PRINCIPAL CITIES

THE *principal cities* of Persia are Tehran, the capital (pop. 555,000); Tabriz (pop. 219,000); Isfahan (pop. 205,000); Meshed (pop. 139,000); Hamadan (pop. 104,000); Resht (pop. 122,000); and Shiraz (pop. 129,000). There are 7 other cities with a population of over 50,000.

THE GOVERNMENT

SUPERFICIALLY Persia's system of government is like our own. At the head of the State is a constitutional monarch. The country is run by a Ministry responsible to the Majlis. The Government is much concerned with a set of wholly new problems, which we in England have also had to tackle: the

Digitized by Google

necessity to check hoarding, for instance; to put down "black market" profiteering and to introduce rationing. The present Shah, H.I.M. Mohammed Reza Pahlevi, is a young man of twenty-three, of liberal outlook, with a particular interest in his army. He was educated in Switzerland. In 1939 he married a sister of King Farouk of Egypt.

The Majlis, which consists of one hundred and thirty-six members, is elected for two years only. All male citizens have the right to vote at twenty-one. There is no regular party system inside the Majlis, and the House is divided into a number of different groups. Legislation may be initiated by any member with the support of fifteen other members, but most bills are introduced by the Government. Such bills are then submitted to an appropriate Committee of the Majlis, then to the Majlis itself, and if passed, they go up to the Shah for his signature. According to the Constitution all Persians enjoy equal rights before the law, and the safety, property and honour of every Persian citizen is guaranteed. No Persian may be molested or arrested without an order from a Court of Justice.

ADMINISTRATION

FOR administrative purposes Persia is divided into ten Provinces or Ustans, each of which is governed by the Governor-General or Ustandar. These Ustans are subdivided into forty-nine Shahristans or counties, each under a Farmandar and including a town which forms the seat and centre of the administration.

THE PERSIAN LANGUAGE

LIKE English the Persian language belongs to the Indo-European language group. About the year 2000 B.C. the peoples who spoke the parent language separated and began to spread westwards into Persia and then on into Europe. Many words in our language show some affinity to Persian, and suggest the common origin of both; examples are: bad—bad; mother—mader; father—pedar; brother—barader; daughter—dokhter; two—do; six—shish; nine—ne; is—ast; bind—band; thou—to; bear—bar; mouse—mush; name—nam; door—dar; lip—lab; and many others.

As a result of the invasion of Persia by the Arabs in the seventh century B.C., Persians embraced Islam and adopted the Arabic script. Their vocabulary was enriched by many Arabic words, and an important literary activity developed in the newly formed language which has given Persian literature a high place among the literatures of the world.

Although you will not be expected to learn to speak Persian, you

Digitized by Google

can easily pick up a few simple phrases which will be useful to you. When you meet a Persian you should say "Sălámăn ăleikŭm" (Peace be upon you), and when you leave him "Khudá Háfiz" (God be your protector). There are a dozen ways of saying thank you, the shortest of which is "Mamnoon."

THE ROAD SYSTEM OF PERSIA

THE present road system of Persia is largely due to the enterprise and imagination of Reza Shah Pahlevi, the father of the present Shah. He realised that if Persia was to play a part in the modern world her communications would have to be radically improved. Existing roads were modernised, and new roads were built, more than 5,000 bridges and culverts were constructed. Among the principal new highways were: Kazvin-Zinjan-Tabriz, Arak (Sultanabad)-Ahmaz, Kerman-Bandar Abbas, Kerej-Chalus on the Caspian, and Meshed-Zahidan (thus linking Persia with India). The most spectacular of these was the road from Tehran to Chalus, over the Kandovan Pass, 9,584 ft. above sea-level, which has a two-mile-long tunnel through the highest part of the Elburz mountains. Altogether there are now some 15,000 miles of motorable roads in Persia. The more important of these are now being speedily improved by British, Russian and American engineers, and are in constant use as supply routes to the U.S.S.R.

THE TRANS-PERSIAN RAILWAY

BY far the most significant of the many public works undertaken by Reza Shah was the construction of the famous Trans-Persian railway, linking the Caspian Sea with the Persian Gulf. Some experts have said that had the Shah spent the £30,000,000 it cost to build this railway on a network of concrete roads he would have served the country better. To-day, as a main Russian supply route, the railway is at any rate proving its value in a way never contemplated by its creator. Until the building of the Trans-Persian, the great country of Persia had virtually no railways. This line is in many ways the most extraordinary in the world. It is one of the few great railways that have been built in any Oriental country without borrowing from abroad, and as an engineering enterprise it is certainly unique. From Bandar Shahpur on the Persian Gulf, to Bandar Shah on the Caspian Sea, the line is 892 miles long. There are 227 tunnels. In two places the line reaches a height of over 7,000 feet above sea-level. In one section, between Tehran and the Caspian, it drops 4,300 feet in a distance of 20 miles. The last rail of the main line was laid by Reza Shah in August 1939.

Digitized by Google

INDUSTRIES

WITH the exception of the oil industries in Khuzistan, Persia's industries are small and relatively undeveloped. Reza Shah imported a good deal of machinery from Europe and engaged foreign technicians as he wished to establish industries based upon the raw materials which Persia could produce. As a result there are a number of factories making cotton and wool textiles, sugar, cement, cigarettes, matches, glass, paper, glycerine, soap, candles, canned fruits, leather, vegetable oils, munitions and aeroplane spares. A small shipbuilding yard was established on the Caspian Sea. Most of these enterprises are either owned or part-owned by the State.

OIL

THE only really important industry in Persia is the extraction and refining of oil at the head of the Persian Gulf. The oil-fields of South-West Persia are among the richest in the world, and with the loss of the oil from Burma and other places in the Far East, they have become of vital importance to the United Nations. Under a concession from the Persian Government the Persian oil-fields are operated by the Anglo-Iranian Oil Company. This concession ends in 1993. The Company works at present five separate fields, all connected by pipe line with the huge refineries at Abadan near the mouth of the Karun River. The total exported from the Persian fields in a normal pre-war year was between 8 and 9 million tons. Crude and refined oil and oil products are shipped abroad from Abadan in the Company's own tankers.

The Persian State, as owner of the mineral rights, shares handsomely in the prosperity of the enterprise. The British Government owns more than half the shares in the Company. The Company assists in the technical training of the youth of Persia, and under a clause in its agreement spends ten thousand pounds a year in sending Persian youths to Birmingham and London for training in petroleum technology.

THE FOOD SITUATION: AGRICULTURE

FOUR-FIFTHS of the people of Persia live on the land, yet for her size Persia's agricultural production is relatively small. There are large tracts of the country which cannot be cultivated at all ; on others there is a chronic shortage of water ; and in most areas agricultural methods (the plough pulled by oxen, wheat reaped with sickle and winnowed on a threshing floor) are primitive.

The most important agricultural product of Persia is wheat.

Digitized by Google

The peasants of the Persian Plateau and the poor in the towns eat little else than bread—they can rarely afford meat and the only variety in their diet consists of sour milk, cucumbers, a little fruit and a few vegetables. The next most important grain crop is barley, and most of this was used as fodder for horses (oats are practically unknown). Along the Caspian rice is the principal food crop. Maize, millet, beans, peas and potatoes are also grown. Valuable agricultural exports in peace-time were wool, rice, cotton, and dried fruits. Persia's export trade has virtually stopped. During Reza Shah's reign successful experiments in the raising of tea, tobacco and sugar-beet were made.

You will find that the shortage of wheat and flour is in everyone's mind at present. This shortage is due to a variety of causes of which the chief are hoarding by landowners (who hope to profit by famine prices), shortage of transport for bringing in wheat from the country districts, and the general insecurity resulting from war-time conditions. This wheat shortage, which now also exists in India, in Syria and other nearby countries, has become of great political importance. An American technical adviser has been appointed to the Ministry of Food in Tehran, and under a Food Declaration signed in December 1942, the British and American Governments have undertaken to import considerable quantities of wheat from Canada and elsewhere as soon as possible. Meanwhile small quantities are being advanced from Persia/Iraq Command's reserves to meet the recurrent food crises in Tehran and other big Persian cities.

As you cross the plains that lie between the series of mountain ranges, you may notice from time to time a number of mounds stretching for miles in a straight line. These are the debris from the excavation of subterranean tunnels, which carry water from the foothills to some village many miles away. In their struggle to fertilise the arid wastes of their country the Persians have evolved a very ingenious irrigation system. These tunnels or Kanats are cut by a professional tunnel digger, who digs a channel from the plain to the spring in the foothills, often the work of many months.

LANDLORD AND PEASANT: POVERTY

MUCH of the country still consists of large estates, or of collections of villages owned by some great proprietor. Much is also owned by small proprietors—men who possess one or two small villages. The relationship between landlord and peasant in Persia is governed by tradition and by ancient custom. It is in theory fair, friendly and democratic, for the peasant is not a serf, and pays no rent, giving the landlord instead a percentage of his harvest. The share given to the landlord depends on how many

Digitized by Google

of the elements which make the harvest—the water, the labour, the ox and the seed—are provided by him.

You will notice with surprise the extreme poverty of the population—unless you have been in India, where even greater poverty prevails. The peasants' poverty is, of course, due partly to the barren nature of the country, and the dependence of the people on agriculture for their living. Remember the poverty of the Persian working-classes if you come into contact with them. Many of them are permanently hungry.

BAZAARS

EVERY important town in Persia has a covered Bazaar, and however used you may become to the country it is always an exciting experience to turn from the glare and noise of the open street into the cool shades of these arched thoroughfares, or the courtyards of the caravanserais which stand next to them.

If you are stationed near Isfahan, visit the Bazaar of that important city, for it is the largest and busiest in the country. Isfahanis are artists by nature, and the Bazaar of Isfahan is filled with local products : carpets, printed cloths, painted ivories, Persian miniatures, articles in beaten and engraved copper, brass or iron. You will also find the Gaz of Isfahan the best sweet in the East. Tehran Bazaar is second in importance only to that of Isfahan. Tehranis are merchants and traders, and this Bazaar is filled with imported goods, and stuff from all over Persia ; it is also the best market for carpets. The vast Bazaar of Tabriz was, until twenty years ago, one of the busiest markets in the Middle East, but is so no longer.

To many people the word " Persian " suggests a carpet, and you will see, both in the Bazaars and elsewhere in the towns many splendid examples of this old Persian industry. Persian carpets are of two kinds : tribal rugs, made in the villages or by nomad tribes and dyed by hand, and large carpets, woven in small factories and with elaborate flower designs.

PERSIAN HOUSES

IN the last two decades European villas have been built in considerable numbers in Tehran and other towns ; but many Persians, particularly in the provinces, still live in houses built according to the old Persian pattern. These houses consist of two buildings placed side by side, with a communicating door, or a curtained gap, between them. These houses have living-rooms built round a paved courtyard ; they have no windows on the outside, but every room gives on to the central court through an arched opening. These arches are constructed by the Persian mason with great skill. The buildings are seldom more than one storey high and are raised

Digitized by Google

well above ground level. Along one side of the courtyard, on the same side as the principal rooms, runs a verandah with a high roof supported on poplar poles coated with plaster. Underneath the main floor is a large basement room used as a living-room in summer; in the south this room is cooled by an airshaft which sticks high above the roof to catch any wind. In the centre of each flagged courtyard is a large rectangular or circular water-tank. The courtyard is decorated with beds of flowers and with small trees. The floors of the rooms are of earth, laid upon poplar branches; the floors are covered with carpets from wall to wall.

The furniture of an old style Persian house is simple, since Persians don't believe in cluttering their houses up with knick-knacks. The rooms are almost empty, with a few chairs, a little table or two, and perhaps a box in one corner. The windows are often decorated with fragments of coloured glass set in a pattern; the walls and ceilings are covered with plaster-designs; and little mirrors are sometimes let into the walls. The principal decoration of the Persian room is, of course, the carpet. Formerly Persians reclined on the floor upon bolsters and cushions, and this is still the practice in country districts, though no longer followed in the towns, where tables, chairs, and even beds are now used.

RELIGIONS

THE chief religion of Persia is Islam, one of the great religions of the world.

Islam was founded by Mohammed, who was born in Mecca about the year A.D. 570. Of prosperous merchant stock, he began to feel a religious call at the age of forty, and became convinced that he was the mouthpiece of God. His disciples took down his inspired sayings, and these, collected after his death, now form the Koran (or "Recitation"), the sacred book of Islam just as the Bible is the sacred book of Christianity. The principles of Islam are basically simple and can be stated: (1) God is one. (2) From time to time God sends prophets to earth—Abraham, Moses, Jesus, Mohammed, etc. These prophets are not divine. (3) The good Moslem will enjoy Paradise, the bad Moslem and all unbelievers will go to Hell. (4) Paradise can only be earned by observing five essential duties—cleanliness, prayer, fasting, pilgrimage and giving alms to the poor.

Soon after the death of the Prophet in A.D. 632 the unity of Islam was split by two sects—Shias and Sunnis. To-day the Shia sect is less austere than the Sunnis in its religious practices, and more liberal in its interpretation of doctrine. Most Persian Moslems are Shias. Persians may seem cynical and casual about religion, but they are actually very sensitive to any slight on their beliefs or

Digitized by Google

practices. You should therefore refer to these with respect, and if you wish to visit a mosque or shrine it will be wisest to get a Persian to take you.

The only Christian community in Persia of any importance is the Armenian community, with their headquarters in Julfa, a suburb of Isfahan. There are communities of Zoroastrians (fire-worshippers) in Yezd and Kerman.

You will find that in Persia, as in all Islamic countries, there are a succession of festivals and feasts. Of these Id-i-no-Ruz, or the Festival of the New Year, is the most important. The first thirteen days of the Mohammedan month of Moharram are days of mourning. The Mohammedan month of Ramazan is a month of fasting, as ordained by the Prophet.

The No-Ruz Festival generally falls on March 21st. It is not a religious festival and is celebrated with zest by sceptics and believers alike. It is the gayest period in the Persian year, when the winter is over and spring has begun. The shops are closed. Everyone goes to the bath, wears new clothes, and receives his friends.

The first thirteen days of the month of Moharram are a period of showy mourning, commemorating the death in battle of Im am Hussein, of Ali his father and of Hassan his brother.

These sad events used to be celebrated by a performance of a Passion Play based on the lives of the martyrs and ending with a battle scene, and also by public recitations of long religious poems or stories by a mullah (priest), but such religious demonstrations were forbidden by Reza Shah, who was determined to reduce the power of the mullahs.

SOME PERSIAN CUSTOMS

FOR many centuries the manner of life of Persians remained unaltered. Descriptions of Persia by sixteenth-century travellers differ little from those by visitors of forty years ago. In this century, however, Persia has undergone a profound change, and Western modernisation has become the order of the day. In part this was due to the general awakening of nationalism in the peoples of the East; but more specifically to the deliberate policy of Reza Shah. Persia, though, is still in a state of change, and old manners and customs are obviously too deeply rooted to be swept away by new fashions in the space of twenty years. In villages and among the tribes life goes on in the old way.

You must remember that some of the customs that we may admire in Persia recall to many modern Persians a past they are anxious to forget. The late Shah was so sensitive in this matter that he forbade the sale of postcards of photographs of camels,

Digitized by Google

mules or donkeys in Persian villages, on the grounds that Persia had now abandoned such primitive means of transport and could boast railways and cars.

Although Mohammedan Law allows a man to marry four wives, Persians usually limit themselves to one (a temporary concubine is permitted during absence on a journey or a pilgrimage). In a society in which women have always occupied a position of great inferiority to men, it is natural that the majority of them are unable to read or write ; only the daughters of the rich used to be literate. Now, however, women in Persia are theoretically equal to men, and of all Reza Shah's reforms perhaps the most important was the abolition of the veil and the admission of women into male society. In most towns girls' schools have been opened, and girls were ordered to take part in games and sports. Child marriage was abolished. All this gave Persian women a freedom they had never before possessed, and gave them power to fight such customs as plural marriage and divorce. But a tradition such as that which shut women away in their husband's house and made them wear veils if they went out dies slowly : and you must avoid at all costs assuming that you can treat Persian women with the same freedom that you would use towards women in Europe. Tehran is more Westernised in this respect than other parts of Persia ; but even here you must be careful not to give offence.

In Persia coffins are not used. The body is put on a rough bier and carried through the streets to the cemetery followed by a throng of onlookers. Don't be surprised if you meet many such funeral processions in the streets of Persian cities.

HOW TO BEHAVE TOWARDS PERSIANS

1. If you dislike Persia (though this is improbable) don't tell the Persians so. It is their country and they like it. You are their guest.

2. If some Persian customs seem odd to you, don't jump to the conclusion that Persians are mad. They like it that way, and you will usually find on enquiry that there are excellent reasons for what they do.

3. If Persians seem slow in their methods and lack what we call efficiency, don't assume that they are lazy. To them speed and efficiency are not matters of first importance ; there is a good deal to be said for their point of view.

4. Don't bully Persians who are doing things for you. Treat them kindly and be patient.

5. If a Persian uses phrases which you consider hypocritical, don't let him see you doubt his sincerity. He is merely being polite.

Digitized by Google

6. If you have anything important to discuss with a Persian, don't rush him ; allow yourself plenty of time.

7. If a bazaar merchant quotes a price that seems to you excessive, don't lose your temper. He expects you to suggest a far lower one : Persians enjoy bargaining for its own sake. To them it is a trial of wits, but it must be good humoured.

8. If you enter a mosque, don't forget that to Persians it is a sacred place. Until a few years ago no Christians were allowed inside a mosque, and many Persians are not yet used to the change. Be careful and respectful, and if you are asked to put on slippers, put them on.

9. If you want to call on a Persian, don't drop in without making an appointment. This " asking for a time," as it is called, is a normal courtesy on all occasions. When coffee has been served it is time for you to go ; but first beg your host to allow you to withdraw.

10. You may be asked why Britain, which is fighting for the rights of small nations, has occupied part of neutral Persia. Don't resent the question. Answer it. You can say (*a*) that the Anglo-Saxon nations are not pretending to fight for small nations, but are genuinely fighting for them ; (*b*) that we are in the country to defend it from attack by Germany. Point out that we have regularised our position by the Treaty of Alliance. You can refer to the many long-term benefits (improved roads, greater port facilities, etc., use of local labour) which Persia will obtain from our war effort, and explain that we are in fact continuing the material achievements of Reza Shah. You can also point out that whereas the Germans strip bare the countries they occupy, we have imported many thousands of tons of wheat, sugar, etc., into Persia since August 1941.

11. Above all, never forget that while the Persians are proud, and justly proud, of their ancient civilisation and the record of their achievements in art, architecture, and literature, they are thinking, and the younger generation in particular are thinking, more of the present and of the future than of the past. They are deeply anxious to know what their place will be in the world of to-morrow, and many of them are anxious, too, that their country should fit itself for an honourable place in that world. Socially, culturally, and in matters of administrative and economic reform Persia is passing through a very difficult time. Their efforts to put their house in order demand the sympathy, help and encouragement of us all. One thing you will very soon find out about the Persian. He is the most hospitable and kindliest person in the world ; and if you go out to meet him in a friendly spirit he will meet you very much " more than half-way."

Digitized by Google

THE PERSIAN CALENDAR

The months of the Persian year are :—

Farvardin	21st Mar.–20th Apr.	*Mehr*	23rd Sept.–22nd Oct.
Ordibehest	21st Apr.–21st May	*Aban*	23rd Oct.–21st Nov.
Khordad	22nd May–21st June	*Azar*	22nd Nov.–21st Dec.
Tir	22nd June–22nd July	*Dey*	22nd Dec.–20th Jan.
Mordad	23rd July–22nd Aug.	*Bahman*	21st Jan.–19th Feb.
Shahrivar	23rd Aug.–22nd Sept.	*Esfand*	20th Feb.–21st Mar.

The Persian year 1319 is from 22nd March, 1940, to 21st March, 1941, the Year 1320 from 22nd March, 1941, to 21st March, 1942, and so on.

COINAGE

128–130 rials = £1 (standard rate).
Bank notes : 5, 10, 20, 50, 100, 500 and 1,000 rials.
Bronze Coins : 5, 10, 50 dinars.
1 rial = 100 dinars.

A confusing feature of the Persian coinage is that the rial, though it is the unit of currency, does not exist as a coin. Instead there is a 50 dinar piece (known generally as 10 shahis) which is worth half a rial or approximately a penny. This is the normal unit of small change, the 5 and 10 dinar coins being of too low value for any practical purposes. A further complication is that the rial is commonly called a kran, this being its old name, while 10 rials are generally known as a tomán. The tomán does not exist either as a coin or a note but is generally used in calculating any large sum of money—e.g. 1,000 rials are described as 100 tománs.

WEIGHTS AND MEASURES

The decimal system (metres, kilometres and kilograms) is officially used. (For distances, 6,000 metres equals 1 farsakh equals 3·8 miles.)

★

PRINTED IN ENGLAND

Digitized by Google

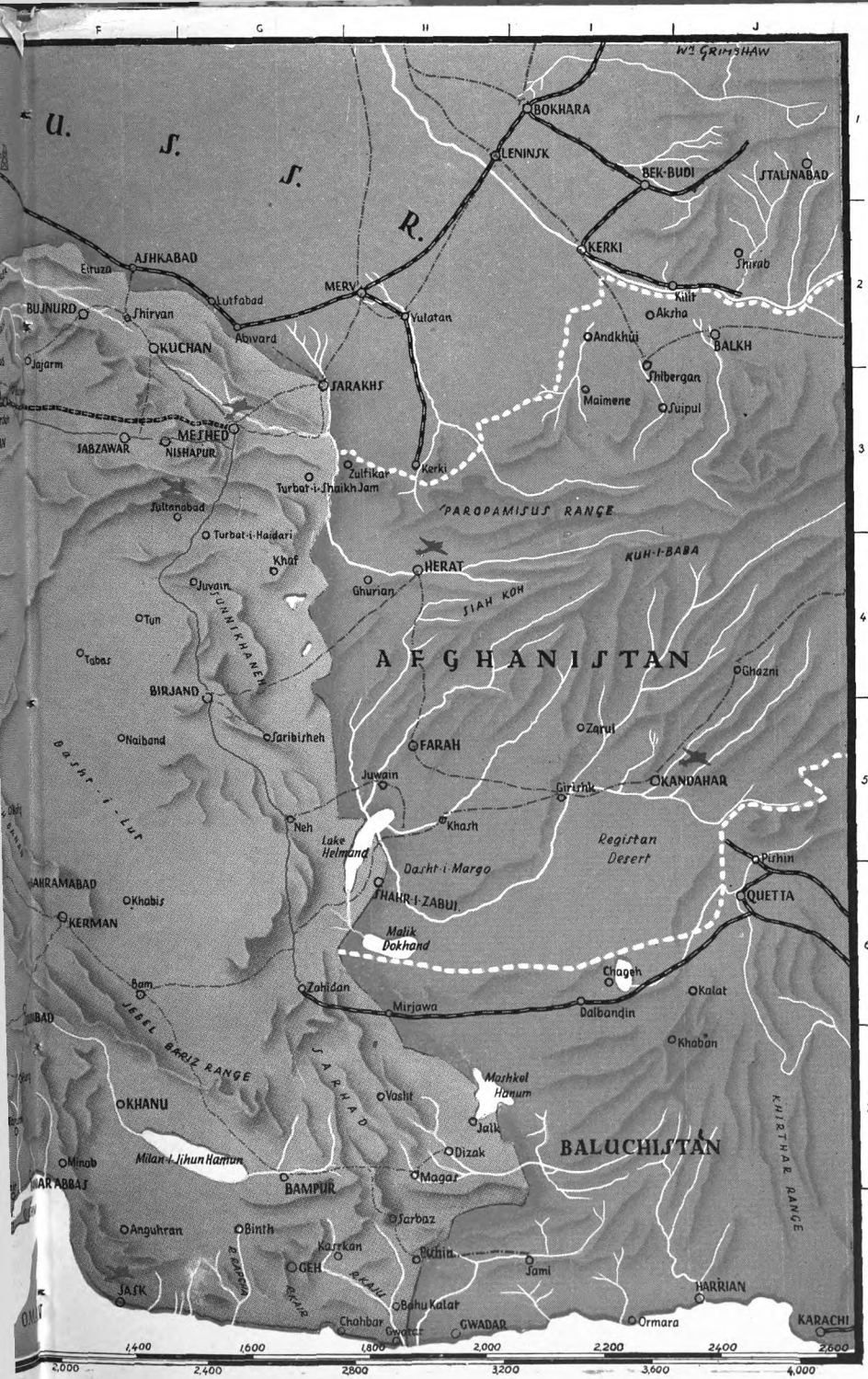
Digitized by Google



Produced and Published by Serial Map Service, Letchworth, Herts

Digitized by Google

Scale—1 : 18,374,000

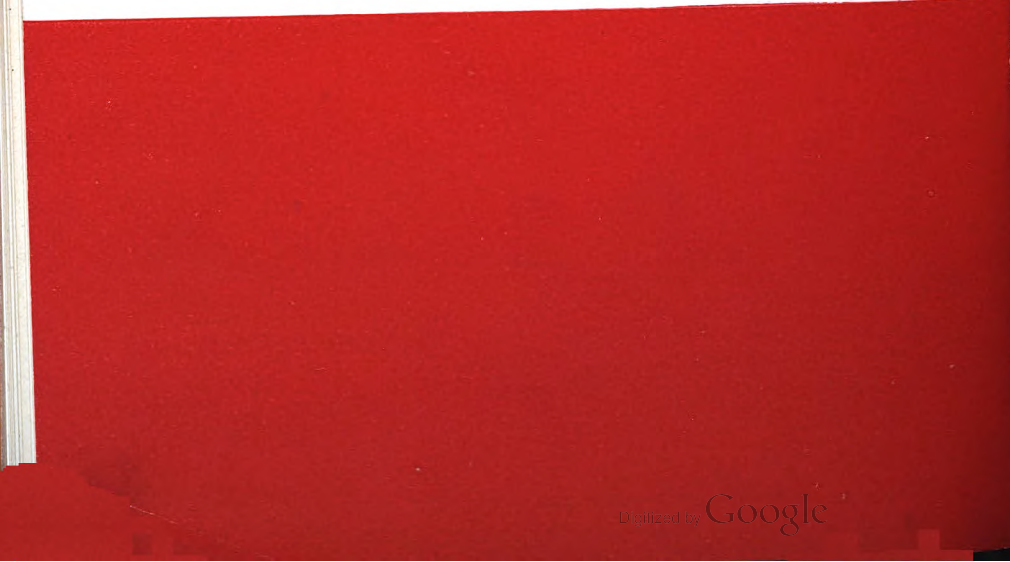


and London ☆ Copyright in all countries by Serial Map Service

Digitized by Google

Digitized by Google




Digitized by Google

DEFENSE

The inner story as told in the Foreign Office telegrams and documents abridged from the Blue Book and Sir Nevile Henderson's Final Report



MINISTRY OF INFORMATION

HOW HITLER MADE THE WAR

H.M. STATIONERY OFFICE LONDON

3d NET

Digitized by Google

Digitized by Google

CONTENTS

	PAGE
GERMANY'S PACT WITH POLAND	3
THE MARCH CRISIS	5
THE STRUGGLE FOR PEACE	11
THE AUGUST CRISIS	17
THE OUTBREAK OF WAR	27
HITLER AND HITLERISM: SIR NEVILE HENDERSON'S REPORT	35

Digitized by Google

Digitized by Google

HOW HITLER MADE THE WAR

GERMANY'S PACT WITH POLAND

On January 26, 1934, the Governments of Germany and Poland concluded a 10-year agreement.

> " The German Government and the Polish Government," it declared, " consider that the time has come to introduce a new phase in the political relations between Germany and Poland by a direct understanding between State and State. . .
>
> The two Governments base their action on the fact that the maintenance and guarantee of a lasting peace between their countries is an essential pre-condition for the general peace of Europe.
>
> They have therefore decided to base their mutual relations on the principles laid down in the Pact of Paris of the 27th August, 1928 " [i.e., the Briand-Kellogg Pact for the renunciation of war as an instrument of national policy]. . .
>
> " Both Governments announce their intention to settle directly all questions of whatever sort which concern their mutual relations.
>
> Should any disputes arise between them and agreement thereon not be reached by direct negotiation, they will in each particular case, on the basis of mutual agreement, seek a solution by other peaceful means. . . . *In no circumstances, however, will they proceed to the application of force for the purpose of reaching a decision in such disputes.*"

HITLER REAFFIRMS HIS FRIENDSHIP WITH POLAND.

This declaration was to remain in force for a period of ten years ; and Hitler repeatedly reaffirmed the friendly attitude of his Government towards Poland. Thus in his Reichstag speech of March 7, 1936, he said :

> " I would like the German people to learn to see in other nations historical realities which a visionary may well like

Digitized by Google

to wish away, but which cannot be wished away. . . . I would therefore like the German people to understand the inner motives of National Socialist foreign policy, which finds it painful that the outlet to the sea of a people of 35 millions is situated on territory formerly belonging to the Reich, but which recognises that it is unreasonable and impossible to deny a State of such a size as this any outlet to the sea at all. . . "

Again, in his Reichstag speech of February 20, 1938, Hitler said of the problem of Danzig that:

" since the League of Nations finally gave up its perpetual attempts to unsettle Danzig and appointed in the new commissioner a man of great personal attainments, this most dangerous spot from the point of view of European peace has entirely lost its menacing character. The Polish State respects the national conditions in this State, and both the City of Danzig and Germany respect Polish rights. And so the way to a friendly understanding has been successfully paved, an understanding which, starting from Danzig, has to-day succeeded in spite of the attempts of certain mischief-makers in finally taking the poison out of the relations between Germany and Poland and transforming them into a sincere friendly co-operation."

As late as September 26, 1938, in the speech at the Berlin Sportpalast in which he renounced all further territorial ambitions in Europe, Hitler said :

" We are all convinced that this agreement will bring lasting pacification. We realise that here are two peoples which must live together and neither of which can do away with the other. A people of 33 millions will always strive for an outlet to the sea. A way for understanding, then, had to be found ; it has been found ; and it will be ever further extended . . .

It was a real work of peace, of more worth than all the chattering in the League of Nations Palace at Geneva."

Digitized by Google

THE MARCH CRISIS

THE NAZIS OCCUPY PRAGUE. (*March 15, 1939*)

On March 15, 1939, a new situation was created in Europe by the German annexation of Bohemia-Moravia, the country of the Czechs. "Public opinion in the world," said Mr. Chamberlain in his speech at Birmingham on March 17, "has received a sharper shock than has ever yet been administered to it, even by the present regime in Germany." Mr. Chamberlain went on to repeat the story of his meeting with Hitler the previous September at Godesberg, when the German Chancellor

> "speaking with great earnestness, repeated what he had already said at Berchtesgaden—namely, that this" [the Sudetenland] "was the last of his territorial ambitions in Europe, and that he had no wish to include in the Reich people of other races than German. Herr Hitler himself confirmed this account of the conversation in the speech which he made at the Sportpalast in Berlin, . . . and he added: 'I shall not be interested in the Czech State any more, and I can guarantee it. We don't want any Czechs any more.'"
>
> "Well, in view of those repeated assurances given voluntarily to me," continued the Prime Minister, "I considered myself justified in founding a hope upon them that once this Czecho-Slovakian question was settled, as it seemed at Munich it would be, it would be possible to carry farther that policy of appeasement which I have described. But, notwithstanding, at the same time I was not prepared to relax precautions until I was satisfied that the policy had been established and had been accepted by others, and therefore, after Munich, our defence programme was actually accelerated . . .
>
> How can these events this week be reconciled with those assurances which I have read out to you? . . . What has become of this declaration of 'No further territorial ambition'? What has become of the assurance 'We don't want Czechs in the Reich'? What regard had been paid here to that principle of self-determination on which Herr Hitler argued so vehemently with me at Berchtesgaden when he was asking for the severance of Sudetenland from Czecho-Slovakia and its inclusion in the German Reich? . . .
>
> Does not the question inevitably arise in our minds, if it is so easy to discover good reasons for ignoring assurances so

Digitized by Google

solemnly and so repeatedly given, what reliance can be placed upon any other assurances that come from the same source?

There is another set of questions which almost inevitably must occur in our minds and to the minds of others, perhaps even in Germany herself. Germany, under her present regime, has sprung a series of unpleasant surprises upon the world. The Rhineland, the Austrian *Anschluss*, the severance of Sudetenland—all these things shocked and affronted public opinion throughout the world. Yet, however much we might take exception to the methods which were adopted in each of those cases, there was something to be said, whether on account of racial affinity or of just claims too long resisted—there was something to be said for the necessity of a change in the existing situation.

But the events which have taken place this week in complete disregard of the principles laid down by the German Government itself seem to fall into a different category, and they must cause us all to be asking ourselves: 'Is this the end of an old adventure, or is it the beginning of a new?

Is this the last attack upon a small State, or is it to be followed by others? Is this, in fact, a step in the direction of an attempt to dominate the world by force?'"

The same point was developed by Viscount Halifax in a speech to the House of Lords on March 20. "For years past," he said,

"the British people have steadily desired to be on friendly terms with the German people. There is no stronger national instinct among our people than the instinct that leads them, when they have a fight, to shake hands and try to make it up. Our people were not backward in recognising some of the mistakes of the Versailles Treaty that required remedying, but each time during these last years that there has seemed a chance of making progress in understanding, the German Government has taken action which has made that progress impossible. More especially has that been the case in recent months. Very shortly after Munich certain measures were taken by the German Government that gave a profound shock to world opinion. Quite recently it was to be hoped, although there were many clouds still over and below the horizon, that we could look forward to closer economic collaboration . . . All that initiative has been frustrated by the action of the German Government last week, and it is difficult to see when it can be easily resumed."

Digitized by Google

HITLER'S NEW PROPOSALS TO POLAND. (*March* 21)

Within a week of the occupation of Prague, the German Government gave a clear indication of their future intentions. On March 21, they presented a number of new proposals to the Polish Government.

These proposals required that Danzig should return " as a Free State into the framework of the German Reich," and that Germany should receive a route and railway with extra-territorial status through the Corridor. In exchange, Hitler offered Poland a 25-year Non-Aggression Pact and a pledge that Germany would regard the existing boundaries between Germany and Poland as " ultimate."

The Polish answer to these proposals was handed to the German Government on March 26.

> " (*a*) The Polish Government propose a joint guarantee by Poland and Germany of the separate character of the Free City of Danzig, the existence of which was to be based on complete freedom of the local population in internal affairs and on the assurance of respect for Polish rights and interests.
>
> (*b*) The Polish Government were prepared to examine together with the German Government any further simplifications for persons in transit as well as . . . railway and motor transit between the German Reich and East Prussia . . .
>
> In formulating the above proposals the Polish Government acted in the spirit of the Polish-German Declaration of 1934 which, by providing the direct exchanges of views on questions of interest to both countries, authorised each State to formulate its point of view in the course of negotiations."

THE ANGLO-POLISH DECLARATION OF MUTUAL SUPPORT. (*April* 6)

Meanwhile the German occupation of Prague and the German attitude to Poland had convinced the British Government of the necessity of consulting with Poland and other States threatened by Nazi aggression with a view to providing for mutual security.

> " In order to make perfectly clear the position of His Majesty's Government in the meantime before those consultations are concluded," said Mr. Chamberlain in the House of Commons on March 31, " I now have to inform the House that during that period, in the event of any action which clearly threatened Polish independence, and which the Polish Government accordingly considered it vital to resist with their national forces, His Majesty's Government would

Digitized by Google

feel themselves bound at once to lend the Polish Government all support in their power. They have given the Polish Government an assurance to this effect.

I may add that the French Government have authorised me to make it plain that they stand in the same position in this matter as do His Majesty's Government."

On April 6, an Anglo-Polish communiqué announced that the two countries would:

"enter into an agreement of a permanent and reciprocal character to replace the present temporary and unilateral assurance given by His Majesty's Government to the Polish Government. Pending the completion of the permanent agreement, M. Beck gave His Majesty's Government an assurance that the Polish Government would consider themselves under an obligation to render assistance to His Majesty's Government under the same conditions as those contained in the temporary assurance already given by His Majesty's Government to Poland."

HITLER'S RETORT TO THE ANGLO-POLISH AGREEMENT.

(*April* 28)

The German Government's answer to the Anglo-Polish agreement was revealed on April 28. On that day the German Government handed the Polish Government a note denouncing the German-Polish Agreement of January, 1934. On the same day Hitler made a speech to the Reichstag in which he attempted to justify this act of unilateral denunciation as follows:—

"After the problem of Danzig had already been discussed several times some months ago, I made a concrete offer to the Polish Government . . ."

"The Polish Government have rejected my offer and have only declared that they are prepared (1) to negotiate concerning the question of a substitute for the Commissioner of the League of Nations and (2) to consider facilities for the transit traffic through the Corridor."

"The intention to attack on the part of Germany, which was merely invented by the international press, led as you know to the so-called guarantee offer and to an obligation on the part of the Polish Government for mutual assistance . . . This obligation is contradictory to the agreement which I made with Marshal Pilsudski some time ago, seeing that in this agreement reference is made exclusively to existing obligations, that is at that time, namely, to the obligations

Digitized by Google

of Poland towards France of which we were aware. To extend these obligations subsequently is contrary to the terms of the German-Polish non-aggression pact. Under these circumstances I should not have entered into this pact at that time, because what sense can non-aggression pacts have if one partner in practice leaves open an enormous number of exceptions . . .

I therefore look upon the agreement which Marshal Pilsudski and I at one time concluded as having been unilaterally infringed by Poland and thereby no longer in existence ! "

HITLER DENOUNCES THE ANGLO-GERMAN NAVAL AGREEMENT.

In the same speech Hitler announced his decision to denounce the Naval Agreement concluded four years earlier with Great Britain. " Apart from this " (the colonial question), he said in an attempt to justify this further act of unilateral denunciation,

" I have never advanced a claim which might in any way have interfered with British interests or have become a danger to the Empire and thus have meant any kind of damage to England. I have always kept within the limit of such demands as are intimately connected with Germany's living space and thus the eternal property of the German nation. Since England to-day, both by the press and officially, upholds the view that Germany should be opposed under all circumstances, and confirms this by the policy of encirclement known to us, the basis for the Naval Treaty has been removed."

POLAND'S ANSWER TO HITLER. (*May* 5)

In a memorandum to the German Government dated May 5, the Polish Government stated their position in the light of Hitler's action. They pointed out that for a month they had received no reply to their original counter-proposals of March 26 and

" it was only on the 28th April, 1939, that they learnt from the Chancellor's speech and from the German Government's memorandum that the mere fact of the formulation of counter-proposals, instead of the acceptance of the verbal German suggestions without alteration or reservation, had been regarded by the Reich as a refusal of discussions.

It is clear that negotiations in which one State formulates demands and the other is to be obliged to accept those demands

Digitized by Google

unaltered are not negotiations in the spirit of the declaration of 1934 and are incompatible with the vital interests and dignity of Poland."

"The Polish Government cannot accept such an interpretation of the declaration of 1934 as would be equivalent to a renunciation of the right to conclude political agreements with third States and, consequently, almost a renunciation of independence in foreign policy. The policy of the German Reich in recent years has clearly indicated that the German Government have not drawn conclusions of this sort from the declaration as far as they themselves were concerned. The obligations publicly accepted by the Reich towards Italy and the German-Slovak Agreement of March, 1939, are clear indications of such an interpretation by the German Government of the declaration of 1934. . .

The Polish Government reject as completely without foundation all accusations regarding the alleged incompatibility of the Anglo-Polish Mutual Guarantee of April, 1939, with the Polish-German Declaration of 1934. This guarantee has a purely defensive character and in no way threatens the German Reich, in the same way as the Polish-French Alliance, whose compatibility with the Declaration of 1934 has been recognised by the German Reich. . ."

"It appears from the above that the Government of the German Reich had no justification for their unilateral decision to regard the declaration of 1934 as not binding. The pact was, indeed, concluded for ten years without any possibility of denunciation during that time. . ."

M. BECK'S SPEECH. (*May* 5)

The Polish attitude was further clarified in a speech made by M. Beck on the same day before the Polish Parliament. In this speech he explained the history of Danzig and pointed out that while "the population of Danzig is predominantly German, its livelihood and prosperity depend on the economic potential of Poland." He ended by repeating his Government's readiness to approach "objectively and with the utmost goodwill" any points raised for discussion by the German Government; but insisted that two conditions were necessary if the discussions were to be of any real value, namely, (1) peaceful intentions, (2) peaceful methods of procedure.

Digitized by Google

THE GÖRING INTERVIEW. (*May 27*)

The effect of these events on the relations between Germany and Great Britain can be seen from the following report sent to Lord Halifax by the British Ambassador in Berlin :

" My Lord, *Berlin, May 28, 1939.*

I paid a short visit to Field-Marshal Göring at Karinhall yesterday.

2. Field-Marshal Göring, who had obviously just been talking to someone else on the subject, began by inveighing against the attitude which was being adopted in England towards everything German and particularly in respect of the gold held there on behalf of the National Bank of Czecho-Slovakia. Before, however, I had had time to reply, he was called to the telephone and on his return did not revert to this specific question. He complained, instead, of British hostility in general, of our political and economic encirclement of Germany and the activities of what he described as the war party in England, etc.

3. I told the field-marshal that, before speaking of British hostility, he must understand why the undoubted change of feeling towards Germany in England had taken place. As he knew quite well the basis of all the discussions between Mr. Chamberlain and Herr Hitler last year had been to the effect that, once the Sudeten were allowed to enter the Reich, Germany would leave the Czechs alone and would do nothing to interfere with their independence. Herr Hitler had given a definite assurance to that effect in his letter to the Prime Minister of the 27th September. By yielding to the advice of his " wild men " and deliberately annexing Bohemia and Moravia, Herr Hitler had not only broken his word to Mr. Chamberlain but had infringed the whole principle of self-determination on which the Munich Agreement rested.

4. At this point the field-marshal interrupted me with a description of President Hacha's visit to Berlin. I told Field-Marshal Göring that it was not possible to talk of free will when I understood that he himself had threatened to bombard Prague with his aeroplanes, if Dr. Hacha refused to sign. The field-marshal did not deny the fact but explained how the point had arisen . . .

Digitized by Google

5. I thereupon reminded Field-Marshal Göring that, while I had always appreciated the necessity for the Czechs, in view of their geographical position, to live in the friendliest political and economic relations with Great Germany, he had personally assured me last October that this was all that his Government desired. The precipitate action of Germany on the 15th March which I again ascribed to the wild men of the party, had consequently, apart from everything and everybody else, been a great shock to me personally and had undone all that I had sought to achieve during my two years at Berlin. Moreover, however indifferent this might seem to him, I could not but regard the destruction of the independence of the Czechs as a major political error, even in Germany's own interests.

GÖRING'S EMBARRASSMENT.

6. The field-marshal appeared a little confused at this personal attack on his own good faith, and assured me that he himself had known nothing of the decision before it had been taken. He would not, he said, have gone to San Remo if he had; nor had his stay there profited him, as he had hoped, owing to the unexpected amount of work which had in consequence been thrust upon him. He then proceeded to give a somewhat unconvincing explanation . . . of the German attempt to come to a satisfactory arrangement with the Czechs and of its failure owing to Czech obstinacy and the revival of what he called the Beneš spirit as the result of American encouragement.

7. As my time was limited, I told Field-Marshal Göring that I was well aware of the reasons adduced by his Government to justify its action, but I thought it more important that he himself should understand the British point of view in consequence of it. As the result of the Prague *coup* His Majesty's Government and the British people were determined to resist by force any new aggression. No one desired an amiable arrangement between Germany and Poland in respect of Danzig and the Corridor more than ourselves. But, if Germany endeavoured to settle these questions by unilateral action such as would compel the Poles to resort to arms to safeguard their independence, we and the French as well as other countries would be involved, with all the disastrous consequences which a prolonged world war would entail, especially for Germany, etc.

Digitized by Google

A TIRADE.

Field-Marshal Göring did not appear to question our readiness to fight and restricted his reply to an attempt to prove that circumstances in 1939 were different to those in 1914, that no Power could overcome Germany in Europe, that a blockade this time would prove unavailing, that France would not stand a long war, that Germany could do more harm to Great Britain than the latter to her . . . that the Poles . . . were not and never had been a really united nation . . . etc. The field-marshal used, in fact, all the language which might be expected in reply to a statement that Germany was bound to be defeated. While I was perturbed at his reference to the unreality of Polish unity, which resembled the German arguments last year in regard to Czecho-Slovakia, he gave me the impression, by somewhat over-stating his case, of considerably less confidence than he expressed.

8. At the end of this tirade, moreover, he asked me whether England 'out of envy of a strong Germany' was really bent on war with her and, if not, what was to be done to prevent it. I said that nobody in their senses could contemplate modern war without horror, but that we should not shrink from it if Germany resorted to another act of aggression. If, therefore, war was to be avoided, patience was necessary and the wild men in Germany must be restrained. Admittedly present-day Germany was in a dynamic condition, whereas England was by tradition the land of compromise. But compromise had its limits, and I did not see how the situation could be saved unless his Government were prepared to wait in order to allow excited spirits to calm down again and negotiations to be resumed in a better atmosphere.

9. At this point Field-Marshal Göring remarked that if the Poles tried to seize Danzig nothing would stop the Germans from acting at once. As my time was short, I made no comment on this but continued that neither the Prime Minister nor yourself had yet abandoned hope of a peaceful solution either as between Germany and Poland or between Germany and Great Britain, but that everything now entirely depended on Germany's behaviour and actions.

THE VIRTUE OF PATIENCE.

10. As I had already got up to go, the conversation then took a more amicable turn. Though I was in a hurry, he insisted

Digitized by Google

on showing me with much pride the great structural alterations which he is making to the house at Karinhall and which include a new dining room to hold an incredible number of guests and to be all of marble and hung with tapestries. He mentioned incidentally that the rebuilding would not be completed before November. He also produced with pride drawings of the tapestries, mostly representing naked ladies labelled with the names of various virtues such as Goodness, Mercy, Purity, etc. I told him that they looked at least pacific, but that I failed to see Patience among them.

I have, etc.

NEVILE HENDERSON."

LORD HALIFAX AT CHATHAM HOUSE. (*June 29*)

On June 16, Viscount Halifax again repeated to the German Ambassador in London that neither Great Britain nor any other Power was " encircling " Germany, and on June 29 he took the opportunity, in a speech at a dinner of the Royal Institute of International Affairs, Chatham House, to define at some length the attitude and policy of Great Britain.

" In the past," he said, " we have always stood out against the attempt by any single Power to dominate Europe at the expense of the liberties of other nations, and British policy is, therefore, only following the inevitable line of its own history, if such an attempt were to be made again."

" We are told that our motives are to isolate Germany within a ring of hostile States, to stifle her natural outlets, to cramp and throttle the very existence of a great nation. What are the facts? They are very simple and everybody knows them. Germany is isolating herself, and doing it most successfully and completely. She is isolating herself from other countries economically by her policy of autarky, politically by a policy that causes constant anxiety to other nations, and culturally by her policy of racialism. If you deliberately isolate yourself from others by your own actions you can blame nobody but yourself, and so long as this isolation continues, the inevitable consequences of it are bound to become stronger and more marked. The last thing we desire is to see the individual German man, or woman, or child suffering privations ; but if they do so, the fault does not lie with us, and it depends on the German Government and on the German Government alone whether this process of isolation continues or not, for any day it can be ended by a policy of co-operation. It is well that this

Digitized by Google

should be stated plainly so that there may be no misunder standing here or elsewhere."

" British policy," the Foreign Secretary concluded, " rests on twin foundations of purpose. One is determination to resist force. The other is our recognition of the world's desire to get on with the constructive work of building peace. If we could once be satisfied that the intentions of others were the same as our own . . . then, I say here definitely, we could discuss the problems that are to-day causing the world anxiety . . . But that is not the position which we face to-day. The threat of military force is holding the world to ransom, and our immediate task is . . . to resist aggression. I would emphasise that to-night with all the strength at my command, so that nobody may misunderstand it."

DETERIORATION IN THE SITUATION AT DANZIG. (*June* 3-*July* 3)

With the increase of agitation in the Reich the local situation at Danzig rapidly became worse. On June 3 the President of the Danzig Senate made accusations against Polish customs inspectors. The Polish Government on June 10 replied with a denial of the accusations and a statement of the legal rights of Poland in relation to Danzig. On June 27 the Polish Vice-Minister for Foreign Affairs told Sir H. Kennard, the British Ambassador in Warsaw, that a Freicorps was being formed in Danzig. Mr. Shepherd, the British Consul-General in Danzig, also reported upon military preparations in the city. On June 30, in view of the gravity of the situation, Viscount Halifax suggested consultation between the British, French and Polish Governments to prevent Hitler from manœuvring the Polish Government into a position where they would appear as aggressors. Meanwhile, the Polish Government maintained a restrained attitude.

BRITISH ATTITUDE TOWARDS DANZIG. (*July* 10–15)

On July 10, while the situation at Danzig was becoming critical, the Prime Minister defined the British attitude towards the Danzig problem in a statement in the House of Commons. He pointed out that it was before Poland had received any guarantee from Great Britain that the Polish Government, fearing to be faced with unilateral German action, had replied to the German proposals, by putting forward counter-proposals of their own. The cause of the Polish refusal to accept the German proposals was to be

Digitized by Google

found in the character of these proposals and in the manner and timing of their presentation and not in the British guarantee of Poland.

On July 14 Sir Nevile Henderson discussed with Baron von Weizsäcker, German State Secretary at the Ministry for Foreign Affairs, a statement by one of the German Under-Secretaries that " Herr Hitler was convinced that England would never fight over Danzig." Sir Nevile Henderson repeated the affirmation already made by the British Government that, in the event of German aggression, Great Britain would support Poland in resisting force by force.

LULL AT DANZIG. (*July 19–August 2*)

During July there was a temporary lull in the situation. The acting British Consul-General at Danzig reported on July 19 that Forster, the leader of the National Socialist party in Danzig, had stated, after an interview with Hitler, that " nothing will be done on the German side to provoke a conflict," and that the Danzig question could " wait if necessary until next year or even longer." Forster repeated this statement a week later. On July 21 Viscount Halifax instructed Mr. Norton, the British Chargé d'Affaires at Warsaw, to impress upon the Polish Government the need for caution. M. Beck replied, on July 25, that the Polish Government were equally anxious for a *détente.*

THE SITUATION AT DANZIG WORSENS AGAIN. (*August 4–16*)

On August 4 M. Beck told the British Chargé d'Affaires at Warsaw that the Danzig Senate had that day informed Polish customs inspectors at four posts in Danzig that henceforward they would not be allowed to carry out their duties. The Polish Government took " a very serious view " of this step. Similar news came from Mr. Shepherd at Danzig. On August 9 Sir H. Kennard reported that the Polish attitude was " firm but studiously moderate."

A day later, Sir H. Kennard reported to the British Government a communication made by the German Government to the Polish Chargé d'Affaires at Berlin on the Danzig question, and the Polish reply. M. Beck drew the attention of Sir H. Kennard to " the very serious nature of the German *démarche* as it was the first time that the Reich had directly intervened in the dispute between Poland and the Danzig Senate." The Polish Government in their reply to the German *note verbale* stated that they would " react to any attempt by the authorities of the Free City

Digitized by Google

which might tend to compromise the rights and interests which Poland possesses there in virtue of her agreements, by employment of such means and measures as they alone shall think fit to adopt, and will consider any future intervention by German Government to detriment of these rights and interests as an act of aggression."

Sir Nevile Henderson on August 15 discussed with Baron von Weizsäcker the deterioration in the Danzig position, and pointed out that if the Poles " were compelled by any act of Germany to resort to arms to defend themselves there was not a shadow of doubt that we would give them our full armed support. . . Germany would be making a tragic mistake if she imagined the contrary." Baron von Weizsäcker himself observed that " the situation in one respect was even worse than last year as Mr. Chamberlain could not again come out to Germany." Baron von Weizsäcker also discounted the character of Russian help to Poland and thought " that the U.S.S.R. would even in the end join in sharing in the Polish spoils."

Meanwhile, on August 11, M. Burckhardt, the League of Nations High Commissioner in Danzig, had a conversation with Hitler at Berchtesgaden at the latter's request, in which the question of Danzig and the European situation was discussed.

Lord Halifax, who still hoped that Hitler might avoid war, advised the Polish Government to make it clear that they remained ready for negotiations over Danzig.

THE GERMAN MINORITY IN POLAND.

Sir H. Kennard reported that the German press campaign about the persecution of the German minority in Poland was a " gross distortion and exaggeration of the facts." On August 26 Sir H. Kennard reported frontier incidents which had been provoked by the Germans. They had not caused the Poles to change their " calm and strong attitude of defence."

THE AUGUST CRISIS

MR. CHAMBERLAIN'S LETTER TO HITLER. (*August 22*)

On August 22, after the publication of the news of von Ribbentrop's visit to Moscow to sign a non-aggression pact with the U.S.S.R., the Prime Minister sent a personal letter to Hitler. Mr. Chamberlain once again gave a clear statement of the British obligations to Poland, and stated that " Whatever may prove to be the nature of the German-Soviet Agreement, it cannot alter

Digitized by Google

Great Britain's obligation." He added that " It has been alleged that, if His Majesty's Government had made their position more clear in 1914, the great catastrophe would have been avoided. Whether or not there is any force in that allegation, His Majesty's Government are resolved that on this occasion there shall be no such tragic misunderstanding."

AN INTERVIEW WITH HITLER. (*August* 23)

On August 23 Sir Nevile Henderson reported his first interview with Hitler earlier in the day. Hitler was " excitable and uncompromising " ; his language was " violent and exaggerated both as regards England and Poland."

> " He began by asserting that the Polish question would have been settled on the most generous terms if it had not been for England's unwarranted support. I drew attention to the inaccuracies of this statement, our guarantee having been given on 31st March and Polish reply on 26th March. He retorted by saying that the latter had been inspired by a British press campaign, which had invented a German threat to Poland the week before. Germany had not moved a man any more than she had done during the similar fallacious press campaign about Czecho-Slovakia on the 20th May last year.
>
> He then violently attacked the Poles, talked of 100,000 German refugees from Poland, excesses against Germans, closing of German institutions and Polish systematic persecution of German nationals generally. He said that he was receiving hundreds of telegrams daily from his persecuted compatriots. He would stand it no longer, etc. I interrupted by remarking that while I did not wish to try to deny that persecutions occurred (of Poles also in Germany) the German press accounts were highly exaggerated. He had mentioned the castration of Germans. I happened to be aware of one case. The German in question was a sex-maniac, who had been treated as he deserved. Herr Hitler's retort was that there had not been one case but six.
>
> His next tirade was against British support of Czechs and Poles. He asserted that the former would have been independent to-day if England had not encouraged them in a policy hostile to Germany. He insinuated that the Poles would be to-morrow if Britain ceased to encourage them to-day. He followed this by a tirade against England, whose friendship he had sought for twenty years only to see every

Digitized by Google

offer turned down with contempt. The British press was also vehemently abused. I contested every point and kept calling his statements inaccurate but the only effect was to launch him on some fresh tirade."

"At the end of this first conversation Herr Hitler observed, in reply to my repeated warnings that direct action by Germany would mean war, that Germany had nothing to lose and Great Britain much; that he did not desire war but would not shrink from it if it was necessary; and that his people were much more behind him than last September.

I replied that I hoped and was convinced that some solution was still possible without war and asked why contact with the Poles could not be renewed. Herr Hitler's retort was that, so long as England gave Poland a blank cheque, Polish unreasonableness would render any negotiation impossible. I denied the 'blank cheque' but this only started Herr Hitler off again and finally it was agreed that he would send or hand me his reply in two hours' time."

Hitler was calmer at a second talk,—he "never raised his voice once,"—but no less uncompromising. He put the whole responsibility for war on Great Britain, and maintained that Great Britain was "determined to destroy and exterminate Germany. He was, he said, 50 years old; he preferred war now to when he would be 55 or 60." He said that "it was England who was fighting for lesser races, whereas he was fighting only for Germany."

The German reply to the Prime Minister's letter was given to the British Ambassador on August 23. Hitler stated that the British promise to assist Poland would make no difference to the determination of the Reich to safeguard German interests, and that the precautionary British military measures announced in the Prime Minister's letter of August 22 would be followed by the mobilisation of the German forces.

THE GERMAN-SOVIET NON-AGGRESSION PACT. (*August 23*)

On August 23 a 10-year Non-Aggression Pact was signed between Germany and Russia. They agreed not to attack one another; not to support a third Power that attacked the other and not to join any grouping of Powers directed directly or indirectly against the other; to keep in touch and consult together on questions touching their joint interests; and to clarify disputes or disagree-

Digitized by Google

ments arising between them by friendly exchange of opinion or, if necessary, by arbitration committees.

Speeches by Mr. Chamberlain and Lord Halifax on August 24 made plain the unshaken determination of Great Britain to honour British obligations to Poland.

FORSTER APPOINTED HEAD OF THE STATE OF THE FREE CITY OF DANZIG. (*August* 23)

Gauleiter Forster was declared by decree of the Danzig Senate, on August 23, Head of the State (Staatsoberhaupt) of the Free City of Danzig. The Polish Government protested to the Senate against the illegality of this appointment.

WORLD APPEALS TO SAVE PEACE.

During these last days of August appeals for peace and offers of mediation, by letter and by radio, were made by President Roosevelt, by the King of the Belgians in the name of the Heads of States of Belgium, Denmark, Finland, Holland, Luxembourg, Norway and Sweden, by the Queen of Holland, by the Pope, and by Signor Mussolini.

THE POLISH GOVERNMENT TRIES TO GET IN TOUCH WITH THE GERMAN GOVERNMENT. (*August* 24)

In view of the increasing tension in Danzig, M. Beck told Sir H. Kennard that he considered the situation " most grave," and that he had asked the Polish Ambassador in Berlin to seek an immediate interview with the German State Secretary. This interview could not, however, be arranged, since Baron von Weizsäcker was at Berchtesgaden, but the Polish Ambassador had an interview in the afternoon of August 24 with Göring. The field-marshal regretted that " his policy of maintaining friendly relations with Poland should have come to nought and admitted that he no longer had influence to do much in the matter." The field-marshal hinted that Poland should abandon her alliance with Great Britain, and left the Polish Government with the impression that Germany was aiming at a free hand in Eastern Europe.

THE ANGLO-POLISH AGREEMENT SIGNED. (*August* 25)

On August 25 the Anglo-Polish declaration of the previous May was converted into a 5-year Agreement of Mutual Assistance. The two Governments agreed that if either of them became engaged in hostilities with a European Power which attacked them

Digitized by Google

or forced them to defend their independence, the other would immediately give all the help it could, on lines established by their naval, military and air authorities.

A GERMAN MESSAGE TO LONDON. (*August* 25)

On the morning of August 25 Hitler sent for Sir Nevile Henderson and asked him to fly to London to " put the case " to the British Government. The " case," which included an offer of friendship with Great Britain, once the Polish question had been solved, was contained in a " verbal communication " made to the British Ambassador. Hitler was " ready to pledge himself personally " for the " continued existence " of the British Empire if his colonial demands were also fulfilled. During the interview Hitler " was absolutely calm and normal and spoke with great earnestness and apparent sincerity."

Sir Nevile Henderson stated once more that Great Britain " could not go back on her word to Poland " and would insist on a settlement by negotiation. Hitler refused to guarantee a negotiated settlement on the ground that " Polish provocation might at any moment render German intervention to protect German nationals inevitable." He said, " If you think it useless then do not send my offer at all."

The only signs of excitement on Hitler's part were when he referred to Polish persecutions. He said that the Poles fired at German aeroplanes and that there had been another case of castration.

> " Among various points mentioned by Herr Hitler were: that the only winner of another European war would be Japan; that he was by nature an artist not a politician, and that once the Polish question was settled he would end his life as an artist and not as a war-monger; he did not want to turn Germany into nothing but a military barracks and he would only do so if forced to do so; that once the Polish question was settled he himself would settle down; that he had no interest in making Britain break her word to Poland; that he had no wish to be small-minded in any settlement with Poland and that all he required for an agreement with her was a gesture from Britain to indicate that she would not be unreasonable.

After I had left, Herr von Ribbentrop sent Dr. Schmidt to the Embassy with text of verbal statement and also a message from him to the effect that Herr Hitler had always and still

Digitized by Google

wished for an agreement with Britain and begging me to urge His Majesty's Government to take the offer very seriously."

LORD HALIFAX SUGGESTS NEUTRAL OBSERVERS AND EXCHANGE OF POPULATIONS. (*August* 25)

Sir Nevile Henderson's dispatch quoted above had been received at the Foreign Office at 7.0 p.m. At 11.0 that evening suggestions were sent to the Polish Government for the establishment of a corps of neutral observers, who would enter upon their functions if it were found possible to open negotiations. Lord Halifax later suggested the possibility of negotiating over an exchange of populations. M. Beck raised no objection in principle to either proposal.

THE BRITISH REPLY TO HITLER'S MESSAGE. (*August* 28)

On August 28 Viscount Halifax informed the Polish Government through Sir H. Kennard that in the British reply to Hitler "a clear distinction" would be drawn between "the method of reaching agreement on German-Polish differences and the nature of the solution to be arrived at. As to the method, we [His Majesty's Government] wish to express our clear view that direct discussion on equal terms between the parties is the proper means."

The reply of the British Government, suggesting direct discussion between the German and Polish Governments, was presented to Hitler by Sir N. Henderson on August 28. The British Government stated they had "already received a definite assurance from the Polish Government that they are prepared to enter into discussions," and that, if such direct discussion led, as they hoped, to agreement, "the way would be open to the negotiation of that wider and more complete understanding between Great Britain and Germany which both countries desire."

ANOTHER INTERVIEW WITH HITLER. (*August* 28)

In his interview of August 28 with Hitler, Sir N. Henderson repeated the British readiness to reach an Anglo-German understanding, "but only on the basis of a peaceful and freely negotiated solution of the Polish question." Sir Nevile Henderson pointed out to Hitler that "If he was prepared to sacrifice that understanding" [between Britain and Germany] "in order to make war or immoderate demands on Poland, the responsibility was his. We offered friendship but only on the basis of a peaceful and freely negotiated solution of the Polish question."

Digitized by Google

" Herr Hitler replied that he would be willing to negotiate if there was a Polish Government which was prepared to be reasonable and which really controlled the country." He " continued to argue that Poland could never be reasonable : she had England and France behind her, and imagined that even if she were beaten she would later recover, thanks to their help, more than she might lose. He spoke of annihilating Poland. I said that reminded me of similar talk last year of annihilation of the Czechs. He retorted that we were incapable of inducing Poland to be reasonable. I said that it was just because we remembered the experience of Czecho-Slovakia last year that we hesitated to press Poland too far to-day."

" Herr Hitler said that he had to satisfy the demands of his people, his army was ready and eager for battle, his people were united behind him . . ."

TWO STRAIGHT QUESTIONS.

" In the end I asked him two straight questions. Was he willing to negotiate direct with the Poles and was he ready to discuss the question of an exchange of populations? He replied in the affirmative as regards the latter (though I have no doubt that he was thinking at the same time of a rectification of frontiers). As regards the first, he said he could not give me an answer until after he had given reply of His Majesty's Government the careful consideration which such a document deserved. In this connexion he turned to Herr von Ribbentrop and said : ' We must summon Field-Marshal Göring to discuss it with him.' "

" At the end Herr von Ribbentrop asked me whether I could guarantee that the Prime Minister could carry the country with him in a policy of friendship with Germany. I said there was no possible doubt whatever that he could and would, provided Germany co-operated with him."

On August 29 the Prime Minister once more explained in the House of Commons the British standpoint.

(*August* 29)

HITLER DEMANDS A POLISH PLENIPOTENTIARY NEXT DAY.

At 7.15 p.m. on August 29, Sir N. Henderson received from Hitler the German answer that the German Government were prepared to accept the British proposal for direct German-Polish negotiations, but counted on the arrival of a Polish plenipotentiary by August 30. The British Ambassador remarked that the latter demand " sounded like an ultimatum," but, after some heated

Digitized by Google

remarks, both Hitler and von Ribbentrop assured the Ambassador " that it was only intended to stress urgency of the moment . . ." The interview was " of a stormy character." Sir N. Henderson thought that Hitler was " far less reasonable " than on August 28.

At two o'clock in the morning of August 30 Lord Halifax told Sir Nevile Henderson to expect the British reply that afternoon, and asked him to inform the German Government at once of the impossibility of producing a Polish representative in Berlin the same day. Sir Nevile reported that he had already pointed this out the evening before to Hitler, who had replied " that one could fly from Warsaw to Berlin in one and a half hours." The Ambassador added " one can only conclude . . . that Herr Hitler is determined to achieve his ends by so-called peaceful fair means if he can, but by force if he cannot. . . . if Herr Hitler is allowed to continue to have the initiative, it seems to me that result can only be either war or once again victory for him by a display of force and encouragement thereby to pursue the same course again next year or the year after."

AT WARSAW. (*August* 30)

From Warsaw Sir Howard Kennard reported that, rather than submit to the humiliation of sending M. Beck or anyone else to Berlin to discuss a settlement on Hitler's terms, the Poles " would certainly sooner fight and perish . . . especially after examples of Czecho-Slovakia, Lithuania and Austria." Negotiations on equal terms were only possible on neutral ground or perhaps in Italy, and on the basis of a compromise between Hitler's March terms (see p. 7) and the *status quo*.

During the afternoon Lord Halifax asked Sir Howard to appeal to M. Beck for strict instructions to be given against provocation, and especially against persecuting the German minority, a similar appeal being made to Hitler. M. Beck gave the desired assurance but pointed out that German provocation in Danzig was becoming " more and more intolerable."

STEPS IN BERLIN. (*August* 30)

Meanwhile Lord Halifax had notified Berlin that Polish restraint depended on German restraint and mentioned reports " that Germans have committed acts of sabotage which would justify the sternest measures." To this von Ribbentrop undiplomatically replied that British counsels of moderation in Warsaw " had had cursed little effect." Lord Halifax also criticised as " wholly unreasonable " the German insistence " that a Polish representative

Digitized by Google

with full powers must come to Berlin to receive the German proposals," and suggested negotiations through normal channels. If the basis were reasonable the British Government would do their best to help.

THE BRITISH REPLY. (*Midnight, August* 30–31)

At midnight on August 30 the British Ambassador handed von Ribbentrop the reply to Hitler's note of the night before. It expressed appreciation of Hitler's desire for Anglo-German understanding but pointed out that Britain " could not sacrifice the interests of other friends in order to obtain that improvement." Britain did not expect German vital interests to be sacrificed but believed them compatible with Polish interests.

The British Government noted Hitler's acceptance of the British position as to Poland's vital interests and independence, and the proposals for direct negotiations with Poland and for any settlement to be internationally guaranteed. They urged Hitler to approach the U.S.S.R. in the matter. They urged that Germany and Poland should undertake to refrain from aggressive military movements and to arrange a temporary *modus vivendi* for Danzig during discussion.

ADVICE TO M. BECK. (*Early morning, August* 31)

Early next morning Sir Howard Kennard gave a copy to M. Beck, pointing out that Britain, like Poland, objected to much of what Hitler said but that there seemed to be some basis for the direct discussions which Poland had agreed to enter. British determination to implement obligations to Poland without reserve was understood in Berlin and gave a background for conversations. So long as Germany professed willingness to negotiate no opening should be given for putting on Poland the blame for a possible conflict.

TALKS WITH VON RIBBENTROP. (*Midnight, August* 30–31)

Meanwhile von Ribbentrop had seen Sir Nevile Henderson and " read out in German aloud at top speed " a long list of German terms for Poland, of which he refused the Ambassador a copy, saying that as a Polish representative had not reached Berlin by midnight on August 30 " it was now too late." Sir Nevile pointed out that this treatment was a breach of the German assurance that no ultimatum was being given. " I must tell you," he reported to Lord Halifax, " that Herr von Ribbentrop's

Digitized by Google

whole demeanour during an unpleasant interview was aping Herr Hitler at his worst."

THE POLISH ATTITUDE.

In Warsaw urgent moves followed to make Berlin aware of Polish readiness for discussions. M. Beck agreed to instruct the Polish Ambassador to Germany to seek an interview, but would not authorise him to accept a statement of terms " as, in view of past experience, it might be accompanied by some sort of ultimatum . . ." He added that " if invited to go to Berlin he would of course not go, as he had no intention of being treated like President Hacha."

THE SIXTEEN POINTS. (*Evening, August* 31)

The Polish Ambassador was not received by von Ribbentrop until the evening of August 31. Immediately afterwards the German government broadcast their proposals. The Ambassador could not get through to Warsaw because the Germans had closed all communications, and the British Government also first heard Hitler's Sixteen Points on the radio, before they were handed over in a wordy message to Sir Nevile Henderson.

The message stated that Berlin had been ready to receive up to the evening of August 30 a Polish envoy " empowered not only to discuss but to conduct and conclude negotiations." The Führer had " waited two days in vain for the arrival of a Polish negotiator with plenary powers " and thus regarded his proposals as " to all intents and purposes " rejected. He therefore thought it timely to inform the public of the sixteen points (which had been read at high speed, but not given, to the British Ambassador the previous evening). These were, in brief:

1. *Return of Danzig to the Reich.*

2. *The Corridor to decide whether it will belong to Germany or Poland.*

3. *The Corridor to be immediately handed over by Poland to an Anglo-French-Italo-Russian international commission with sovereign rights, pending a plebiscite at which all who were born by or domiciled on January* 1, 1918, *in the Corridor should have a vote.*

4. *The port of Gdynia to remain Polish.*

5. *The plebiscite not to be held for at least a year.*

6. *During this period free transit traffic to be secured to both Germany and Poland.*

Digitized by Google

7. *A simple majority of votes to decide the plebiscite.*

8. *If Poland wins, Germany to receive an extra-territorial traffic zone one kilometre wide for a 4-track railway and motorway to East Prussia. If Germany wins, Poland to have a similar communication to Gdynia.*

9. *If Germany wins, the Reich to exchange population with Poland to a suitable extent.*

10. *Any special Polish rights in Danzig to be balanced by special German rights in Gdynia.*

11. *Danzig and Gdynia to be demilitarised.*

12. *The Hela peninsula near Gdynia to be demilitarised, whether it goes to Poland or Germany under the plebiscite.*

13. *An international committee of enquiry to examine all complaints of economic or physical damage or acts of terrorism against minorities on either side since* 1918. *Germany and Poland to give compensation or make restitution.*

14. *A comprehensive reciprocal guarantee for the future rights of German and Polish minorities.*

15. *In the event of agreement, German and Polish demobilisation to follow immediately.*

16. *Further measures for rapid execution of the arrangement to be agreed on jointly by Germany and Poland.*

THE OUTBREAK OF WAR

GERMANY STRIKES. (*Dawn, September* 1)

At dawn on September 1, before either the Governments or the peoples of other countries had even had a chance to read this interesting document, German troops crossed the Polish frontier. Bombers lost no time in bombing open towns and killing civilians who did not even know war had begun.

At 10.30 a.m. the Polish Ambassador in London told Lord Halifax officially that German forces had crossed the Polish frontier at four points. " He added " wrote Lord Halifax " that the towns of Vilno, Grodno, Brest-Litovsk, Lodz, Katowice and Cracow were being bombed and that at 9 a.m. an air attack had been made on Warsaw, as a result of which there were many civilian victims, including women and children . . . His Excellency said that he had few words to add, except that it was a plain case as provided for by the treaty. I said that I had no doubt on the facts as he had reported them that we should take the same view."

Digitized by Google

Sir Howard Kennard reported from Warsaw: "Minister for Foreign Affairs has just telephoned to me in the middle of an air raid to beg me to point out to your Lordship that various cases of armed German aggression, which have occurred this morning on Polish soil, cannot be taken longer as mere isolated cases but constitute acts of war."

Yet as late as 11.30 a.m. the German Chargé d'Affaires in London was denying to Lord Halifax that Warsaw and other towns were being bombed.

THE BRITISH WARNING TO BERLIN. (*September* 1

That afternoon Mr. Chamberlain told the House of Commons the story of these happenings. "In these circumstances," he pointed out, "there is only one course open to us. His Majesty's Ambassador in Berlin and the French Ambassador have been instructed to hand to the German Government the following document:—

'Early this morning the German Chancellor issued a proclamation to the German Army which indicated clearly that he was about to attack Poland. Information which has reached His Majesty's Government in the United Kingdom and the French Government indicates that German troops have crossed the Polish frontier and that attacks upon Polish towns are proceeding. In these circumstances it appears to the Governments of the United Kingdom and France that by their action the German Government have created conditions, namely, an aggressive act of force against Poland threatening the independence of Poland, which call for the implementation by the Governments of the United Kingdom and France of the undertaking to Poland to come to her assistance. I am accordingly to inform your Excellency that unless the German Government are prepared to give His Majesty's Government satisfactory assurances that the German Government have suspended all aggressive action against Poland and are prepared promptly to withdraw their forces from Polish territory, His Majesty's Government in the United Kingdom will without hesitation fulfil their obligations to Poland.'

(An Hon. Member: 'Time Limit?') If a reply to this last warning is unfavourable, and I do not suggest that it is likely to be otherwise, His Majesty's Ambassador is instructed to ask for his passports. In that case we are ready."

The Prime Minister added:

"We have no quarrel with the German people, except that they allow themselves to be governed by a Nazi Government.

Digitized by Google

As long as that Government exists and pursues the methods it has so persistently followed during the last two years, there will be no peace in Europe. We shall merely pass from one crisis to another, and see one country after another attacked by methods which have now become familiar to us in their sickening technique. We are resolved that these methods must come to an end. If out of the struggle we again re-establish in the world the rules of good faith and the renunciation of force, why, then even the sacrifices that will be entailed upon us will find their fullest justification."

HITLER IN THE REICHSTAG. (*September* 1)

Also on September 1 Hitler addressed the Reichstag. "For months," he said, "we have been suffering under the torture of a problem which the Versailles *Diktat* created—a problem which has deteriorated until it becomes intolerable for us. Danzig was and is a German city. The Corridor was and is German. . . ."

After referring to his treatment of Austria, the Sudetenland, Bohemia and Moravia, he denied "that he who undertakes to carry out these revisions for himself transgresses a law, since the Versailles *Diktat* is not law to us." He alleged that "the minorities who live in Germany are not persecuted."

After accusing the Poles of terrorising Germans and of strangling Danzig, he came to the negotiations:

"For two whole days," he said, "I sat with my Government and waited to see whether it was convenient for the Polish Government to send a plenipotentiary or not. Last night they did not send us a plenipotentiary, but instead informed us through their Ambassador that they were still considering whether and to what extent they were in a position to go into the British proposals. The Polish Government also said that they would inform Britain of their decision.

Deputies, if the German Government and its Leader patiently endured such treatment Germany would deserve only to disappear from the political stage. But I am wrongly judged if my love of peace and my patience are mistaken for weakness or even cowardice. I, therefore, decided last night and informed the British Government that in these circumstances I can no longer find any willingness on the part of the Polish Government to conduct serious negotiations with us."

He went on to thank Italy for an offer of help which, however, he did not intend to invoke. Declarations from the West could not make him hesitate. Germany asked nothing of the West, and

Digitized by Google

regarded the frontier with France as final. With the new and welcome Russian pact as a safeguard against a repetition of 1914 he was determined to clear up (1) the Danzig question, (2) the Corridor question and (3) German-Polish relations. He promised :

> " I will not war against women and children. I have ordered my air force to restrict itself to attacks on military objectives. If, however, the enemy thinks he can from that draw *carte blanche* on his side to fight by the other methods he will receive an answer that will deprive him of hearing and sight. This night for the first time Polish regular soldiers fired on our own territory. Since 5.45 a.m. we have been returning the fire and from now on bombs will be met with bombs."

HITLER NAMES HIS SUCCESSORS.

After extolling his work in building up German military might, he said :

> " I am asking of no German man more than I myself was ready throughout four years at any time to do. There will be no hardships for Germans to which I myself will not submit. My whole life henceforth belongs more than ever to my people. I am from now on just first soldier of the German Reich. I have once more put on that coat that was the most sacred and dear to me. I will not take it off again until victory is secured, or I will not survive the outcome. Should anything happen to me in the struggle then my first successor is Party Comrade Göring ; should anything happen to Party Comrade Göring my next successor is Party Comrade Hess. You would then be under obligation to give to them as Führer the same blind loyalty and obedience as to myself. Should anything happen to Party Comrade Hess, then by law the Senate will be called, and will choose from its midst the most worthy—that is to say the bravest—successor."

He ended with an appeal for stout hearts and sacrifice, and an assertion that :

> " a November 1918 will never be repeated in German history . . . And I would like to close with the declaration that I once made when I began the struggle for power in the Reich. I then said : ' If our will is so strong that no hardship and suffering can subdue it, then our will and our German might shall prevail.' "

Digitized by Google

HITLER'S PROCLAMATION TO THE GERMAN ARMY.

(*September* 1)

Simultaneously Hitler addressed this proclamation to the German Army :

> " The Polish State has refused the peaceful settlement of relations which I desired, and has appealed to arms. Germans in Poland are persecuted with bloody terror and driven from their houses. A series of violations of the frontier, intolerable to a great Power, prove that Poland is no longer willing to respect the frontier of the Reich.
>
> In order to put an end to this lunacy, I have no other choice than to meet force with force from now on. The German Army will fight the battle for the honour and the vital rights of reborn Germany with hard determination. I expect that every soldier, mindful of the great traditions of eternal German soldiery, will ever remain conscious that he is a representative of the National-Socialist Greater Germany. Long live our people and our Reich ! "

The Nazi leader, Forster, the same morning proclaimed the return of Danzig to the Reich, and Hitler accepted it.

SIR NEVILE SEES RIBBENTROP. (9.30 *p.m., September* 1)

At 9.30 p.m. on September 1 Sir Nevile Henderson saw von Ribbentrop and handed him the message quoted in the Prime Minister's speech. He had been instructed, acting jointly with the French Ambassador, to ask for an immediate reply, and to explain, if asked, that the message " is in the nature of warning and is not to be considered as an ultimatum," although Lord Halifax told Sir Nevile that in fact " If the German reply is unsatisfactory the next stage will be either an ultimatum with time limit or an immediate declaration of war."

Ribbentrop, after reading the message, " said that he wished to state that it was not Germany who had aggressed Poland, that on the contrary, it was Poland who had provoked Germany for a long time past ; that it was the Poles who had first mobilised and that yesterday it was Poland that had invaded German territory with troops of the regular army."

> "As I was leaving," Sir Nevile reported, "Herr von Ribbentrop gave me a long explanation of why he had been unable to give me text of German proposals two nights ago. I told him that his attitude on that occasion had been most unhelpful and

Digitized by Google

had effectively prevented me from making a last effort for peace, and that I greatly deplored it.

He was courteous and polite this evening. I am inclined to believe that Herr Hitler's answer will be an attempt to avoid war with Great Britain and France, but not likely to be one which we can accept."

SUSPENSE. (*September* 2)

On Saturday, September 2, M. Beck pointed out to the French and British Ambassadors the effects of German superiority in the air and hoped that Britain and France would enter the war as soon as possible and would be able to draw off a considerable proportion of the German aircraft from the eastern front.

The same morning the Italian Government, which had been seeking to bring about an international conference to be held on September 5 to review the Versailles Treaty, reported to Berlin that a conference was still possible if preceded by an armistice. Hitler in reply asked for 24 hours to mature and take his decision, and this request was passed on from Rome to Paris and London at 2 p.m. The French and British Governments gave Hitler the time asked for, and it was confirmed that the British warning was not an ultimatum.

The same afternoon the Prime Minister reported to Parliament that the German Chancellor had not yet replied, possibly owing to the Italian mediation proposals.

Great Britain would " be bound to take action unless the German forces are withdrawn from Polish territory," but " if the German Government should agree to withdraw their forces then His Majesty's Government would be willing to regard the position as being the same as it was before the German forces crossed the Polish frontier."

Mr. Chamberlain undertook not to prolong the discussion.

THE BRITISH ULTIMATUM AND THE GERMAN REPLY. (*September* 3)

At 5 a.m. on Sunday, September 3, Lord Halifax instructed Sir Nevile Henderson to tell the German Government that unless they gave satisfactory assurances of suspending hostilities and withdrawing from Poland, to reach London by 11 a.m. British Summer Time, a state of war would exist between the two countries.

At 11.15 a.m. British people everywhere listened to Mr.

Digitized by Google

Chamberlain's announcement of the outbreak of war. In the House of Commons the same day the Prime Minister, after announcing the latest developments, concluded " I trust I may live to see the day when Hitlerism has been destroyed and a liberated Europe has been re-established."

The German reply began by saying that " The German Government and the German people refuse to receive, accept, let alone to fulfil, demands in the nature of ultimata made by the British Government." It blamed Britain for " having prevented peaceful revision " and for having encouraged the Polish Government to " continue in their criminal attitude." The German people, it insisted, " do not intend to allow themselves to be ill-treated by Poles." Germany had desired " an understanding, indeed close friendship " with Britain and laid the blame for failure to reach it solely on British leaders.

In proclamations to the German people and the German army, Hitler denounced Britain as pursuing a policy of world conquest and " encirclement " of Germany. Only lack of unity had led to collapse in 1918 and " whoever offends against this unity need expect nothing else than annihilation as an enemy of the nation."

THE PRIME MINISTER'S BROADCAST TO THE GERMAN PEOPLE. (*September* 3)

The Prime Minister in his broadcast talk to the German people on September 3, summed up the situation:

" German people—Your country and mine are now at war. Your Government has bombed and invaded the free and independent State of Poland, which this country is in honour bound to defend. Because your troops were not withdrawn in response to the Note which the British Government addressed to the German Government, war has followed.

With the horrors of war we are familiar. God knows this country has done everything possible to prevent this calamity. But now that the invasion of Poland by Germany has taken place, it has become inevitable.

You are told by your Government that you are fighting because Poland rejected your Leader's offer and resorted to force. What are the facts? The so-called 'offer' was made to the Polish Ambassador in Berlin on Thursday evening, two hours before the announcement by your Government that it had been 'rejected.' So far from having been rejected, there had been no time even to consider it.

Digitized by Google

Your Government had previously demanded that a Polish representative should be sent to Berlin within twenty-four hours to conclude an agreement. At that time the 16 Points subsequently put forward had not even been communicated to the Polish Government. The Polish representative was expected to arrive within a fixed time to sign an agreement which he had not even seen. This is not negotiation. This is a dictate. To such methods no self-respecting and powerful State could assent. Negotiations on a free and equal basis might well have settled the matter in dispute.

WHY BRITAIN IS CONCERNED.

You may ask why Great Britain is concerned. We are concerned because we gave our word of honour to defend Poland against aggression. Why did we feel it necessary to pledge ourselves to defend this Eastern Power when our interests lie in the West, and when your Leader has said he has no interest to the West? The answer is—and I regret to have to say it—that nobody in this country any longer places any trust in your Leader's word.

He gave his word that he would respect the Locarno Treaty; he broke it. He gave his word that he neither wished nor intended to annex Austria; he broke it. He declared that he would not incorporate the Czechs in the Reich; he did so. He gave his word after Munich that he had no further territorial demands in Europe; he broke it. He gave his word that he wanted no Polish provinces; he broke it. He has sworn to you for years that he was the mortal enemy of Bolshevism; he is now its ally.

Can you wonder his word is, for us, not worth the paper it is written on?

The German-Soviet pact was a cynical *volte face*, designed to shatter the Peace Front against aggression. This gamble failed. The Peace Front stands firm. Your Leader is now sacrificing you, the German people, to the still more monstrous gamble of a war to extricate himself from the impossible position into which he has led himself and you.

In this war we are not fighting against you, the German people, for whom we have no bitter feeling, but against a tyrannous and forsworn regime which has betrayed not only its own people but the whole of Western civilisation and all that you and we hold dear.

May God defend the right!"

Digitized by Google

HITLER AND HITLERISM: SIR NEVILE HENDERSON'S REPORT

Such was the history of the events which ended in the outbreak of war. While they were still fresh in his mind, Sir Nevile Henderson, the British Ambassador in Berlin, recorded his first-hand impressions of them in his *Final Report on the circumstances leading to the termination of his mission to Berlin*, which has since been published as a White Paper (Cmd. 6115). This Report provides a study of the background without knowledge of which the previous history cannot be fully understood. For, as the Report points out, it is not the "last minute manœuvres which have the real importance, except in so far as they confirm the principles and demonstrate the methods and technique of Herr Hitler and of Nazism."

THE NATURE OF THE NAZI MOVEMENT.

"Herr Hitler and National Socialism," the Report points out, "are the products of the defeat of a great nation in war and its reaction against the confusion and distress which followed that defeat. National Socialism itself is a revolution and a conception of national philosophy. Contrary to democracy which implies the subordination of the State to the service of its citizens, Nazism prescribes the subordination of its citizens to the service of the State, an all embracing Moloch, and to the individual who rules that State.

So long as National Socialism remained an article for internal consumption, the outside world, according to its individual predilection, might criticise or sympathise or merely watch with anxiety. The government of Germany was the affair of the German people. It was not until the theory of German nationalism was extended beyond Germany's own frontiers that the Nazi philosophy exceeded the limits compatible with peace.

It would be idle to deny the great achievements of the man who restored to the German nation its self-respect and its disciplined orderliness. The tyrannical methods which were employed within Germany itself to obtain this result were detestable, but were Germany's own concern." As Sir Nevile Henderson points out, many of Herr Hitler's social reforms, such as the Labour Camps, were in spite of their complete disregard of personal liberty of thought, word or deed, on highly advanced lines. "Nor" he continues, "can the appeal of Nazism with its slogans so attractive to a not over-discerning youth be ignored. Much

Digitized by Google

of its legislation in this respect will survive in a newer and better world, in which Germany's amazing power of organisation and the great contributions which she has made in the past to the sciences, music, literature and the higher aims of civilisation and humanity will again play a leading part.

HITLER AND THE PROBLEM OF GERMAN UNITY.

Nor was the unity of Great Germany in itself an ignoble ideal. It had long been the dream of some of the highest-minded of German thinkers, and it must be remembered that even in 1914 Germany was still immature as a political concept. In spite of the potential political danger for its weaker neighbours of a national philosophy which could so easily be distorted and extended beyond its due and legitimate frontiers, the unity of Great Germany was a reality which had to be faced, no less than that other reality, the paramount economic importance of Germany in Eastern, Central and South-Eastern Europe. It was not the incorporation of Austria and the Sudeten Germans in the Reich " [in so far as it could be defended in accordance with the principle of self-determination] " which so much shocked public opinion in the world as the unscrupulous and hateful methods which Herr Hitler employed " to precipitate that incorporation.

HITLER'S " SICKENING TECHNIQUE."

That principle constituted the whole basis of the Munich agreement of September, 1938, which Hitler violated six months later, and thus, as Sir Nevile states, " In 1939, as in 1914, the origin of war with Germany has been due to the deliberate tearing up by the latter of a scrap of paper. To the iniquities of a system which employed the barbarism of the middle ages in its persecution of the Jews, which subjected Roman Catholic priests and Protestant pastors alike to the inhumanities of the concentration camp for obedience to their religious faith, and which crushed out, in a fashion unparalleled in history, all individual liberty within the State itself, was added the violation not only of international agreements freely negotiated, but also of that principle of self-determination which Herr Hitler had invoked with such insistence so long as it suited his own purpose to do so. Up to last March the German ship of State had flown the German national flag, and in spite of the ' sickening technique ' of Nazism it was difficult not to concede to Germany the right both to control her own destiny and to benefit from those principles which were accorded to others. On the 15th March, by the ruthless

Digitized by Google

suppression of the freedom of the Czechs, its captain hoisted the skull and crossbones of the pirate, cynically discarded his own theory of racial purity and appeared under his true colours as an unprincipled menace to European peace and liberty.

Two of the less attractive characteristics of the German are his inability either to see any side of a question except his own, or to understand the meaning of moderation. It would have been understandable to argue that a hostile Bohemia in the centre of Germany was an untenable proposition. But Herr Hitler could see no mean between rendering the Czechs innocuous as a potential enemy and destroying their liberty as an independent people. There is some surprising reason to believe that Herr Hitler himself was disagreeably and literally astonished at the reaction in Britain and the world generally, which was provoked by the occupation of Prague and his breach of faith with Mr. Chamberlain. But while he may have realised his tactical mistake, it did not deter him from prosecuting his further designs . . . Herr Hitler felt that it would not add much to the general execration of his aggression and ill-faith in March if he settled these two problems " [i.e. Danzig and the Corridor, and Memel] " simultaneously with Prague. The Democracies were, he thought, so averse to war that they would accept any *fait accompli*. They would be less disturbed if everything was done at once. Thereafter, the agitation would, he anticipated, gradually subside until, after consolidating his gains, he was once more in a position to strike again."

HITLER AND GREAT BRITAIN.

Hitler's calculation in this matter is characteristic of his whole attitude towards the Western Powers, and towards Great Britain in particular. That attitude is described by Sir Nevile in a comment on his interview with Hitler of August 29, during which he says that Hitler delivered " a brief and in my opinion quite honest harangue . . . on the genuineness of his constant endeavour to win Britain's friendship, of his respect for the British Empire, and of his liking for Englishmen generally. I should like to state . . . emphatically," continues Sir Nevile, " that Herr Hitler's constant repetition of his desire for good relations with Great Britain was undoubtedly a sincere conviction," naturally on his own terms, namely a completely free hand in Central Europe, and even so it may be that he only desired them just so long as he was occupied in that part of the world ; but, as Sir N. Henderson continues, " He will prove in the future a fascinating study for the historian and the biographer with psychological

Digitized by Google

leanings. Widely different explanations will be propounded, and it would be out of place and time to comment at any length in this despatch on this aspect of Herr Hitler's mentality and character. But he combined, as I fancy many Germans do, admiration for the British race with envy of their achievements and hatred of their opposition to Germany's excessive aspirations. It is no exaggeration to say that he assiduously courted Great Britain, both as representing the aristocracy and most successful of the Nordic races, and as constituting the only seriously dangerous obstacle to his own far-reaching plan of German domination in Europe. This is evident in *Mein Kampf,* and, in spite of what he regarded as the constant rebuffs which he received from the British side, he persisted in his endeavours up to the last moment. Geniuses are strange creatures, and Herr Hitler, among other paradoxes, is a mixture of long-headed calculation and violent and arrogant impulse provoked by resentment. The former drove him to seek Britain's friendship and the latter finally into war with her. Moreover, he believes his resentment to be entirely justified. He failed to realise why his military-cum-police tyranny should be repugnant to British ideals of individual and national freedom and liberty, or why he should not be allowed a free hand in Central and Eastern Europe to subjugate smaller and, as he regards them, inferior peoples to superior German rule and culture. He believed he could buy British acquiescence in his own far-reaching schemes by offers of alliance with and guarantees for the British Empire. Such acquiescence was indispensable to the success of his ambitions and he worked unceasingly to secure it. His great mistake was his complete failure to understand the inherent British sense of morality, humanity and freedom."

" One of Herr Hitler's greatest drawbacks is that, except for two official visits to Italy, he has never travelled abroad. For his knowledge of British mentality he consequently relied on Herr von Ribbentrop as an ex-Ambassador to Britain, who spoke both French and English, and who had spent some years in Canada, and whom he regarded as a man of the world. If report be true Herr von Ribbentrop gave him consistently false counsels in regard to England, while his successes in other spheres induced Herr Hitler to regard him more and more as a second Bismarck, a conviction which Herr von Ribbentrop probably shared to the full."

THE TRAGEDY OF THE DICTATOR.

" Even the most absolute Dictator is susceptible to the influence of his surroundings. Nevertheless Herr Hitler's decisions, his

Digitized by Google

calculations, and his opportunisms were his own. As Field-Marshal Göring once said to me, ' when a decision has to be taken, none of us count more than the stones on which we are standing. It is the Führer alone who decides.' "

" I think there can be no doubt that Field-Marshal Göring himself would have preferred a peaceful solution, but in matters such as these it was Herr Hitler's decision which alone counted ; and whatever Field-Marshal Göring himself might feel, he was merely the loyal and submissive servant of his master. Moreover, he had come down definitely on the side of peace a year before and it may have been difficult for him to adopt this course a second time."

" In my report on the events of 1938 I drew your Lordship's special attention to the far reaching and unfortunate results of the Blomberg marriage. I am more than ever convinced of the major disaster which that—in itself—minor incident involved, owing to the consequent elimination from Herr Hitler's entourage of the more moderate and independent of his advisers, such as Field Marshal von Blomberg himself, Baron von Neurath, Generals Fritsch, Beck, &c. After February of last year Herr Hitler became more and more shut off from external influences and a law unto himself.

People are apt, in my opinion, to exaggerate the malign influence of Herr von Ribbentrop, Dr. Goebbels, Herr Himmler and the rest. It was probably consistently sinister, not because of its suggestiveness (since Herr Hitler alone decided policy), nor because it merely applauded and encouraged, but because, if Herr Hitler appeared to hesitate, the extremists of the party at once proceeded to fabricate situations calculated to drive Herr Hitler into courses which even he at times shrank from risking. The simplest method of doing this was through the medium of a controlled Press. Thus what happened in September last year, was repeated in March this year, and again in August. Dr. Goebbels' propaganda machine was the ready tool of these extremists, who were afraid lest Herr Hitler should move too slowly in the prosecution of his own ultimate designs.

The 1938 stories of Czech atrocities against its German minority, were rehashed up almost verbatim in regard to the Poles. Some foundation there must necessarily have been for a proportion of these allegations in view of the state of excitable tension which existed between the two peoples. Excess of zeal on the part of individuals and minor officials there undoubtedly was—but the tales of ill-treatment, expropriation and murder were multiplied

Digitized by Google

a hundredfold. How far Herr Hitler himself believed in the truth of these tales must be a matter for conjecture. Germans are prone in any case to convince themselves very readily of anything which they wish to believe. Certainly he behaved as if he did believe, and, even if one may give him the benefit of the doubt, these reports served to inflame his resentment to the pitch which he or his extremists desired."

THE THREAT OF WAR.

" There were, in fact, for Herr Hitler only two solutions : the use of force, or the achievement of his aims by the display of force. ' If you wish to obtain your objective by force, you must be strong ; if you wish to obtain them by negotiation, you must be stronger still.' That was a remark which he made to a foreign Statesman who visited him this year, and it expresses in the concisest possible form the Hitler technique. It was exactly that which he displayed in September 1938. He was no more bluffing then than he was bluffing in August 1939. Up to the middle of August this year the fear of a war on two fronts, with Russia hostile or at least unfriendly, might possibly have deterred him and his military advisers from action against Poland. There was no Eastern front to give him cause for hesitation in 1938, and he could have counted then on Hungarian as well as Polish support in his nefarious plans for the dismemberment of Czecho-Slovakia. But for Munich he would without a shadow of doubt have invaded that country on the 29th September last year, just as surely as he invaded Poland on the 1st September this year, and the war would have come eleven months earlier. In both cases the methods employed were identical : the gradual mobilisation of the German army over a period of months and its secret concentration at the appointed positions, whence the advance could begin at almost any moment and within a very few hours.

So it was again in 1939. If he could have secured his objectives by this display of force he might have been content for the moment, with all the additional prestige which another bloodless success would have procured for him with his own people. But it would only have been to start again once the world had recovered from the shock, and even his own people were beginning to be tired of these repeated crises. Millions of Germans had begun to long for a more peaceful existence. Guns instead of butter were becoming more and more unpopular except with the younger generation, and Hitler may well have wondered what might happen to his Nazi revolution if its momentum were allowed to stop. Moreover the financial and economic position

Digitized by Google

of Germany was such that things could scarcely continue as they were without some form of explosion, internal or external. Of the two alternatives the most attractive from the point of view of his growing personal ambitions, and those of the clique which was nearest to him, was war.

It is scarcely credible that he would have acted as he did if bloody war, rather than a bloodless victory, had not seemed the fairer prospect for him. He had always meant to teach the Poles a lesson for what he regarded as their base ingratitude in refusing the 'generous' demands which he had made to them in March. His only manœuvres since that date were with the object of creating circumstances favourable to his plans or of inducing Britain and France to abandon their Polish ally and to leave him a free hand in Central and Eastern Europe."

ADVICE OF THE SOLDIERS.

"If anything did count, it was the opinion of his Military Advisers. I have always believed that it was they who, in the interests of Germany's strategical security, recommended the establishment of the Protectorate over Bohemia. And again this August, it was they, I fancy, who told Herr Hitler that further delay would be fatal lest the seasonal bad weather in Poland might upset their calculations for her swift overthrow. The army grudged him even the week between the 25th August and the 1st September which his last attempt to secure British neutrality or at least goodwill had cost it.

Yet even so the advice of his soldiers was probably merely cover for the prosecution of Hitler's own plans. His impatience and precipitate action on that last day of August can scarcely have been other than premeditated. All through the summer he had been waiting on events to turn in his favour and had been making his preparations to seize the opportunity, when it was offered to him. The Russian pact appeared to give him the advantage which he was seeking and thereafter there was no time to lose, if mud was not to be added to Poland's allies."

THE NAZI-SOVIET PACT.

"The secret" [of the Russian pact] "which on the German side had been known to not more than a few persons, had been well kept. It had been realised that German counter-negotiations had been proceeding throughout the summer, but it was hoped that they had been abandoned after the actual arrival at Moscow of the French and British military missions . . . The first impression

Digitized by Google

in Berlin was one of immense relief, partly at the removal of the dreaded Russian air menace, but more particularly because, in the minds of a public which had been led to believe by Goebbels' propaganda that the British negotiations with the U.S.S.R. were really encirclement with a view to a preventive war, the conclusion of a Russo-German non-aggression pact meant that peace was assured, since Britain would not, it was told, fight for Danzig or Poland without Russian aid. Once more the faith of the German people in the ability of Herr Hitler to obtain his objective without war was reaffirmed."

Nazi propaganda was, however, throughout the summer, " on two entirely contradictory lines either of which was destined, according to the development of the situation, to serve Herr Hitler's purpose. The first spread the persistent report that Britain would never go to war for the sake of Danzig. It was calculated to undermine the confidence of the Poles and to shake the faith of the smaller Powers, as well as of the United States of America, in the determination of Britain to resist any further German aggression. The second represented Britain as resolved to make war at the first opportunity on Germany in any case and in order to crush her before she became a too formidable political and economic rival. Both were fallacies but the Germans are a credulous race, and since the first has failed, it is the latter argumentation which forms the basis of Germany's present war propaganda."

HITLER'S HESITATION.

Sir Nevile shows that the firm stand maintained by Britain and France after the Moscow pact took the Nazis by surprise. " Herr von Ribbentrop flew back to Germany with the signed Russo-German Agreement and Herr Hitler returned to Berlin the night of the 24th August. I have some reason to believe—though I cannot confirm it—that the order for the German Army to advance into Poland was actually issued for the night of the 25th–26th August. It is difficult otherwise to find justification for the various orders and arrangements which came into force on the 26th–27th August. In the afternoon of the 25th August itself all telephone communication between Berlin and London and Paris was unexpectedly cut off for several hours. The celebrations at Tannenberg were cancelled on the 26th and the Party Rally at Nuremberg on the 27th August; all Naval, Military and Air Attachés at Berlin were refused permission to leave the city without prior authority being obtained from the Ministry of War. All German airports were closed from

Digitized by Google

that date, and the whole of Germany became a prohibited zone for all aircraft except the regular civil lines. All internal German air services were also suspended. Moreover as from the 27th a system for the rationing of food-stuffs and other commodities throughout Germany came into force. That this latter and—for the public—depressing measure should have been adopted prior to the outbreak of war can scarcely be explained, except on the assumption that war should actually have broken out on the 26th August.

The fact may well be, as I imagine it was, that Herr Hitler had had in consequence of the Prime Minister's letter one last hesitation and countermanded the orders to his Army, whereas the other arrangements were allowed to proceed unchecked. But it was not the horrors of war which deterred him. He had unlimited confidence in the magnificent army and air force which he had recreated and he was certainly not averse to putting them to the test so far as Poland was concerned. In two months, he told me, the war in the East would be ended and he would then, he said, hurl 160 divisions against the Western Front if England was so unwise as to oppose his plans. His hesitation was due rather to one final effort to detach Britain from Poland."

THE PARTING OF THE WAYS.

Looking back Sir Nevile points out that " The Ides of March constituted in fact the parting of the ways and were directly responsible for everything which happened thereafter. Thenceforward no small nation in Europe could feel itself secure from some new adaptation of Nazi racial superiority and jungle law. The Polish guarantee was followed by unilateral guarantees on Britain's part to Greece and Roumania as well as by an attempt on the part of the British and French Governments to induce the U.S.S.R. to join in a peace front against aggression, ill-faith and oppression. The Nazi Government, for its part and with considerable success in Germany, represented this attempt as a renewal of the alleged pre-war British policy of encirclement. As a war-cry for the German people it was exceedingly effective up to the signature of the Russo-German non-aggression pact on the 23rd August." Even the German people must have realised then that it was Poland, not Germany, that was being encircled.

But the fact remains that it was Hitler's treatment of the Czechs in March which rendered war inevitable. Thereafter, it proved possible to delay the outbreak, but not to prevent it. Prague was Hitler's Rubicon, and describing how the British Embassy left

Digitized by Google

Berlin on the morning of Monday, the 4th September, Sir Nevile concludes :

" A small crowd collected round the Embassy before our departure, but unlike 1914 it evinced no single sign of hostility. Mr. Kirk " [the United States Chargé d'Affaires] " rendered me one more last service by driving me to the station in his own car. The streets of Berlin were practically deserted and there was nothing to indicate the beginning of a war which is to decide whether force is to be the sole arbiter in international affairs ; whether international instruments solemnly and freely entered into are to be modified, not by negotiation, but by mere unilateral repudiation ; whether there is to be any faith in future in written contracts ; whether the fate of a great nation and the peace of the world is to rest in the future in the hands of one man ; whether small nations are to have any rights against the pretensions of States more powerful than themselves ; in a word, whether government of the people by the people for the people is to continue in this world, or whether it is to be replaced by the arbitrary will and ambition of single individuals regardless of the peoples' will."

Printed under the authority of His Majesty's Stationery Office
By Eyre and Spottiswoode Limited, London

Digitized by Google

DOCUMENTS CONCERNING GERMAN-POLISH RELATIONS

The diplomatic exchanges which culminated in the outbreak of hostilities.

Price 1s. net. Cmd. 6106 By post 1s. 3d.

FINAL REPORT by SIR NEVILE HENDERSON G.C.M.G.

on the circumstances leading to the termination of his mission to Berlin.

Price 3d. net. Cmd. 6115 By post 3½d.

THE TREATMENT OF GERMAN NATIONALS IN GERMANY 1938—1939

Reports received by His Majesty's Government.

Price 3d. net. Cmd. 6120 By post 3½d.

HIS MAJESTY'S STATIONERY OFFICE

LONDON, W.C.2: York House, Kingsway
EDINBURGH 2: 120 George Street MANCHESTER 1: 26 York Street
CARDIFF: 1 St. Andrew's Crescent BELFAST: 80 Chichester Street
or through any bookseller

Digitized by Google

LONDON

PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

To be purchased directly from H.M. STATIONERY OFFICE at the following addresses:
York House, Kingsway, London, W.C.2; 120 George Street, Edinburgh 2;
26 York Street, Manchester 1; 1 St. Andrew's Crescent, Cardiff;
80 Chichester Street, Belfast;
or through any bookseller

1939

Price 3*d.* net

S.O. Code No. 70—9999

Digitized by Google

How to keep well in Wartime

LIBRARY
MAY 10 1943
DOCUMENTS DIVISION



ISSUED FOR THE
MINISTRY OF HEALTH
BY THE MINISTRY
OF INFORMATION

LONDON: HIS MAJESTY'S STATIONERY OFFICE 3D NET

Google

Contents

		Page
Foreword by the Minister of Health		1
1.	BE REGULAR IN YOUR LIVING HABITS ...	2
2.	GET ENOUGH SLEEP	3
3.	GET YOUR SHARE OF AIR AND SUNSHINE	4
4.	KEEP MIND AND BODY ACTIVE	6
5.	CHOOSE THE RIGHT FOOD	8
6.	BE MODERATE IN ALL THINGS	13
7.	A WORD TO THOSE WHO WORRY	16
8.	FIGHT DISEASE WITH HYGIENE	18
9.	STOP GERMS FROM SPREADING	19
10.	HELP YOURSELF TO BE WELL	22
Subject Index		24

Issued for the Ministry of Health
and the Central Council for Health Education
by the Ministry of Information

First Published, 1943

Crown Copyright Reserved

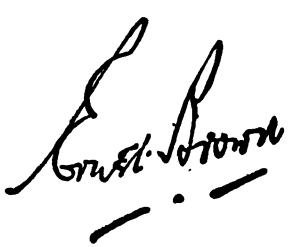
Price 3d. net, or 10s. 0d. for 50 copies

Digitized by Google

Foreword

by the Minister of Health

DURING three years of total war the nation's stubborn good health has been invaluable to our war effort. Even so, as a nation we are still losing about 22 million weeks' work each year through common and often preventable illnesses such as colds and influenza, dyspepsia, biliousness, neurasthenia, rheumatism, boils and other septic conditions. This is calculated to be equivalent to the loss of 24,000 tanks, 6,750 bombers, and 6,750,000 rifles a year, not to mention the pain and inconvenience we suffer as individuals. We cannot expect, whatever we do, to wipe out this loss completely, but we can all do something to reduce it. And now that we are at the turning point of the war it is more than ever important that we should do everything we can to keep fit—fit to hasten victory and to tackle the tasks that lie beyond. But to maintain vigorous health calls for conscious effort from each one of us. In this little book Dr. Clegg has set out the simple safeguards, the common sense rules, and the good habits which we can make part and parcel of our daily lives. By doing so we shall both help ourselves to health and help to keep the nation fighting fit.



Digitized by Google

by H. A. CLEGG, M.B., M.R.C.P.

1. Be Regular in Your Living Habits

A watchmaker will tell you that a watch will keep better time if it is wound up at the same hour each day. The sun rises and sets at regular intervals. With unfailing regularity spring comes after winter. Nature sets us an example in being regular in her habits. If we rebel and become irregular in our habits, we pay for it in the long run.

Don't think that to be healthy you have to be one of the "big muscle boys." A world made up of heavy-weight champions would be a dull place. What you want to aim at is a smooth working of body and mind. A jerky fitfulness of behaviour, of activity, will disturb yourself and those near you.

That is why the first rule of health is to be regular in the habits of living—eating, sleeping, resting, working, emptying the bowels. On a basis of regular habits that self-discipline without which no man can take his full share as a citizen in a civilized community comes easier. Of course, too much regularity can become rather dull, but there is plenty of room for an occasional breakaway. A last-minute decision to go on an excursion, to have a picnic, to visit a friend, often increases the pleasure of the event. Slavish following of a routine is just as harmful as continually living on the impulse of the moment.

"That sounds very nice," you may say, especially if you are a wife and mother—"but there is a war on. We had an air raid last night. The children have to be got off early, so that I can go to the factory. And my husband goes to work earlier still. We live rather a long way from it."

The woman in the home has a thousand and one difficulties to face. Her man, too, has his family anxieties, and he wants to put all he has into his work. Her health, his health, the health of their children are important to the nation to which they belong, and to themselves as individuals. So the extra effort that may be needed to keep the family's habits as regular as possible in face of such difficulties is well worth while.

Start the Day Well. Try to have your meals at the same time each day. This is particularly important for children. At all events, make a good start by having breakfast punctually, and early enough to give everyone in the house a chance to go to the w.c. before work or school. Half the stomach troubles people have begin because they don't give their bowels a chance to open properly after break-

Digitized by Google

fast. A hurried breakfast, bolted rather than eaten, not enough time for a visit to the w.c., a rush for tram, train, or bus—what a thoroughly bad start for the day's work!

If you are troubled with constipation, correct it by attention to diet, habit, and exercise. Do not take drugs for it unless your doctor thinks they are necessary. Eat more vegetables. Drink a glass of water first thing in the morning, and give yourself time.

2. Get Enough Sleep

It is possible that you begin the day badly by ending yesterday badly—that is by going to bed too late. It is true that some people can do with less sleep than others. But the average adult should try to have eight hours' sleep every night, so if you get up at 6 a.m., try to be in bed with the lights off by 10 p.m. A weekly night on fire guard or A.R.P. won't do you any harm if you make up the lost sleep during the week.

People who find it hard to go to sleep are often those who find it hard to relax. They are too tense, too restless, too "nervy." Or it may be that if you find it difficult to fall off to sleep you have "something on your mind"—a domestic worry, anxiety about money, about health. Try to find out what this something is, and then take steps to settle the matter that is worrying you. In any case, try *not* to worry about things you *cannot* change. Here are some tips that may help those who suffer from sleeplessness.

This May Help You to Sleep. If you have been working indoors all day, a quarter of an hour's walk in the open air before bedtime may give you a pleasant feeling of mental relaxation that will quickly bring on sleep. Some people are helped by a hot bath, others by a hot drink (but not tea or coffee), just before going to bed. Others, again, send themselves to sleep by reading a book—a rather stodgy book, not a detective tale.

You won't go to sleep easily if you are too hot or too cold. And you won't sleep healthily if the windows are closed. So open the windows wide, in all weathers except fog, just before getting into bed, and keep warm by putting over yourself more blankets, or a dressing gown, or an overcoat. People who suffer from cold feet should put on socks. A hot water bottle, remember, means extra consumption of fuel, unless you can put your kettle on a fire already in use for heating or cooking. Noise is another disturber of sleep, as you'll know if you're on night shift. Ear plugs, or cotton-wool and vaseline, will help to keep noise out.

Someone in your household may suffer badly from insomnia, and feel run down as a result. In this case seek a doctor's advice. And

Digitized by Google

don't lose sleep worrying about what the doctor will think of you if you go to him. Of course he's busier than usual in wartime and he appreciates considerate treatment, but the National Health Insurance Scheme was invented to make it easier for you to have the benefit of his advice when you really need it.

How Much Sleep Your Children Need. Children need more sleep than adults because they use up so much energy in growing. In summer-time, with its extra hours of daylight, parents find it difficult to get their children to bed. But remember this table:

Age in years	*Hours of sleep needed*
1	14–16
2–3	12–14
4–5	10–12
6–10	10–11
11–16	9½–10

Few things are more important to a child than the right amount of rest and sleep, and modern parents are apt to let their children stay up too late. So you must be firm in this matter. See that the curtains in the room in which your children sleep are well drawn, so that the daylight does not get in. Arrange the beds so that the children sleep with their heads turned away from the window. Once they are asleep and it is dark, you can draw back the curtains so that more air can come into the room.

3. Get Your Share of Air and Sunshine

The black-out makes it less easy to keep rooms well ventilated. But there are one or two obvious points not always borne in mind. The first is that, provided there is not a strong wind, it is not always necessary to shut the windows when you draw the curtains at black-out time. This depends to some extent on how the curtains are placed. You can see whether air currents disturb the black-out by going outside and looking. If your curtains only just fill the space of the window frame, then you might use one of the many devices that give you good ventilation *and* proper black-out. They are based on the fact that air can get round corners but light cannot. If you live in a bed-sitting room, air the room until it is smoke-free before you get into bed.

Why Ventilation is Important. You should pay the greatest attention to ventilation. There is no doubt that we feel better and are better if the rooms in which we work, eat, and sleep are well ventilated. Headaches, lassitude, lack of appetite may all result

Digitized by Google

from a stuffy room, especially from the dead atmosphere of a centrally heated one. It does not matter so much that the air should be fresh as that it should be on the move.

Remember that you yourself are a furnace, continually stoked by food. In the combustion of food in your body—for example, by your muscles when you do physical work—heat is given off. You are a warm-blooded animal and your body is kept at a temperature above that of the air round you. Your normal temperature, as you may know, is 98·4° F., when taken under the tongue. (The temperature of your liver is in the region of 100° F.) An averagé comfortable indoor temperature, whether in shop, office, or living-room, is about 60° to 65° F. So, being hotter than the air round you, you will always be losing heat to it, just as hot water added to cold water will become less hot by losing heat to it. The cold water, of course, becomes warmer.

Still Air Means Stuffy Rooms. If you could not lose the heat produced in your body you would die of heat-stroke; you would simply boil over. The chief way in which you lose heat is by the evaporation of water from your skin and lungs. When you get very hot you lose such a lot of water that it forms into visible drops on your skin—as sweat. If the air is very moist then it will not be able to take up much moisture from your body. And if it is still as well it will not be able to carry away the heat you are giving out. With still, moist air round you, your temperature will tend to rise and you will feel hot, stuffy, and uncomfortable. So keep the air on the move.

If the working process of mill or foundry demands a higher temperature than 65° you will need more than ever to get all the fresh air you can when not at work.

In your living-rooms at home keep the air on the move and the temperature at a moderate level; overheated rooms are inadvisable from the point of view of both health and fuel economy.

Sun-and-air Baths. If you are lucky you may spend your brief annual holiday in a burst of sunshine. But holiday or no, seize every opportunity you can of giving your skin a good airing. The air "bath" is just as important as the sun "bath." The sun bath can be taken in your garden just as well as at the seaside. This is worth remembering now that most of us have to take our holidays at home.

The play of sun and air on the bare skin is stimulating and generally tones you up, especially if you have a sluggish circulation. The ultra-violet rays of the sun act on a fatty substance in your skin and turn it into Vitamin D, the anti-rickets vitamin. This makes it possible for children to have strong and well-formed bones. If it is very hot and you sit in the shade, the ultra-violet rays will still reach your skin from the clear blue sky.

Precautions for Sun-bathers. You can have too much of a good thing, and you can have too much sun; you can in fact get sun-

Digitized by Google

stroke, and your temperature will rise, as in a fever. Or you may just get sun-burn, and blisters will come up on your red and inflamed skin.

So, next summer, start sun-bathing gradually. And don't do it in the heat of the day, but in the early part of the morning and the latter part of the afternoon. Don't sit in the sun immediately after a meal. Young children and old people should take especial care, and blondes should remember that as a rule they can stand the sun less well than brunettes. Those with weak hearts and weak chests, too, must be careful, because undue exposure to the sun may make their troubles worse. Young children and old people should have a covering over the head and the back of the neck. The sun-bather should begin by exposing himself—first one side then the other—for, say, ten minutes on the first occasion. Then, as he or she begins to brown, the exposure can be increased. But to grill oneself can do nothing but harm.

4. Keep Mind and Body Active

Those who can get to the seaside in wartime are lucky. There, in addition to sun and air, they can expose their bodies to sea-water. There are few better ways of exercising the body than swimming, whether in the sea, the river, or in the local baths. Here again the temptation is to overdo it. It is stupid to stay in the water until your fingers and toes go white or blue. There is really no point in showing off to your friends and relations by swimming just too far just a bit too often.

Whether you take your exercise by walking, by cycling, by swimming, by gardening, or by playing games, there is always one sign that will tell you when you are overdoing it—that is, undue fatigue amounting to exhaustion. This is quite different from a healthy tiredness after exercise, which gives you at the same time a feeling of relaxation. A sense of exhaustion means that you have done yourself harm instead of good.

Holidays at Home. For your spare time and your holiday you should aim at two things. The first is relaxation. The second is change. Change itself will help you to relax. And it need not be a drastic change. For years you may not have visited that place only three or four miles from where you live. You may not have been to a concert or a theatre for months or even years. Possibly you have never thought of looking in at the public library.

Don't spend all your time over billiards or cards in a heavy, smoky atmosphere. Do something different. There are many things you can do that will bring change and refreshment into your life, even

Digitized by Google

if the war makes it advisable for you to spend your holiday at home.

Make the Most of Spare Time. It is just as necessary to relax, mentally and physically, during the ordinary working week. The best way of doing this will vary according to circumstances. If your work is of the hard manual kind your muscles will be tired and what you need most perhaps is actual rest. If your job keeps you standing all day or if it involves monotonous repetition, you probably need a change, such as walking, more than rest. (Girls and women should wear low heels for standing and walking.) If you sit all day in an office or a workshop you won't be physically or muscularly tired but you may feel jaded and too tired to take exercise.

What is needed, whatever your work, is change of activity, something that will exercise those of your muscles that you haven't been using during the day, and won't be using on your Home Guard parade or in your Civil Defence duties.

For most of us exercise is essential if health is to have a polish on it. If possible some form of exercise should be taken daily in the open air. One way of doing this is to get up half an hour earlier in the morning, and walk part of the way to work. If you are not too tired at the end of the day you might also walk part of the way back. During this war many people have begun to cycle to work and have felt better for it.

Muscles are Meant to be Used. Those masses of muscle on arm, leg, thigh, back, and belly are not just ornamental. They are there to be used. If they are not used they will sooner or later let you know about it. Muscular rheumatism is a common complaint in this country, and one precaution to take against it is to keep joints and muscles on the go so that the blood flows freely through them. Are your muscles becoming set? Can you, standing with knees straight, touch the tips of your toes with the tips of your fingers? Try it. In your weekends, when you can, walk, cycle, swim, dig, row a boat, and enjoy it. Don't put it off. Start now, and never mind feeling stiff to begin with.

Advice to the Fat. If you are overweight you must start your exercise gradually, and increase it gradually. It is true that some people are fat by nature. In others fatness may be the result of disease. In many people fatness is the result of a combination of over-eating and lack of exercise. A man called Daniel Lambert created what must be a record of fatness. He weighed 52 stone and his waist measurement was 9 feet 4 inches. He died before he was forty. Insurance companies say that fat men do not live so long as thin men.

If you are overweight and feel that your health is not up to scratch, seek your doctor's advice before you do anything about it. Whatever

Digitized by Google

you do, do *not* take slimming tablets or thyroid tablets without a doctor's prescription. People have died from taking tablets supposed to make them slim.

The usual advice to the fat who want to get thin is to tell them to eat less, especially of sweet and starchy foods. In these days of rationing any adjustment of your diet had better be carried out carefully. You need not, of course, eat your ration of sweets. But concentrate on taking more exercise, and begin gradually.

Advice to those Underweight. Being too thin is little better than being too fat. In young women, in particular, leanness is no advantage. Unfortunately, during recent years it has become fashionable for girls and young women to be slim, and they usually manage this by eating too little, rations or no rations. Young women, especially, should eat their full ration, because tuberculosis is commoner among them than among other people. Under-feeding, especially of fats, gives tuberculosis a chance to obtain a hold on a person. There are, by the way, no such things as "slimming foods."

5. Choose the Right Food

It is probable that you already know a lot about food and food values. One of the benefits of this war is the more intelligent interest everyone has taken in food, thanks to necessity and the efforts of the Ministry of Food. If your interest has been aroused, please keep it up now, and when peace comes. Much misery has been caused by faulty feeding and by ignorance of food facts. Thousands upon thousands have died because of such ignorance. For example, in the East, natives living largely on polished rice die of a disease called beri-beri. This is because the vitamin which protects against this disease—vitamin B1—is thrown away with the husks polished off the rice. In the Philippines some 18,000 people died of beri-beri in 1925.

Scientists and doctors are not just being faddy, therefore, when they are anxious that everyone should every day eat enough of the protective foods—the foods that protect against diseases like beri-beri, rickets, and scurvy. Let it be said at once that if you take a good mixed diet—and you can still do so in spite of food rationing—you need not worry about whether you are having enough of this or that. But you must know what is "good."

The Source of all Your Energy. It is becoming rather hackneyed to compare the human body to a machine. But the comparison is a useful one, because most of what is known about the way the body works can be explained on mechanical principles. The engineer can

Digitized by Google

work out that in certain conditions a car will give a certain performance when petrol vapour undergoes combustion in the engine's cylinders. Part of the energy freed by the combustion moves the piston and the car " goes ". Part of the energy is given off as heat, and this warms up the water in the radiator.

The fuel for *your* engine is food. Combustion takes place inside the body. Part of the energy freed is used by your muscles and you " go ". Part is given off as heat and warms your blood. The amount of energy that various foods will give can be exactly calculated. The amount of energy and heat you produce in your body can be measured. And it is easily proved that this energy and this heat come from the combustion of food and nothing else. You cannot, so to speak, create energy.

Oxygen Feeds You, Too. Just as petrol vapour must be mixed with air for it to make the car go, so do you need air. For combustion to take place, oxygen is necessary. You obtain this from the air you breathe. The oxygen in the air which goes to the lungs passes into the blood. The blood carries the oxygen to every part of the body. Without oxygen—without combustion—the body cannot do its work, and so it dies.

How the Body Burns up Sugar. If sugar is burnt outside the body it finally turns into water and carbon dioxide—the gas that gives the fizz to soda water. Exactly the same thing happens in the body. The carbon dioxide is carried by the blood to the lungs, and you breathe it out into the air. (Incidentally, plants use the carbon dioxide in the air as food for themselves.) Some of the water, too, is breathed out of the lungs. But water also leaves the body through the skin as sweat and by the bladder and bowels as urine and fæces.

Combustion of sugar gives the body a quick supply of energy. When you do brain work—read, speak, or listen, for example—the cells in your brain burn up sugar, and for this they need oxygen. The oxygen is carried by the red corpuscles in your blood. If you have too few red corpuscles—if you are anæmic—then your brain may not get enough oxygen and therefore won't work so well.

So, in a sense, oxygen is a food, and that is one reason why doctors want people to have plenty of fresh air in well-ventilated houses, offices and factories. In some illnesses doctors give the patient an extra amount of oxygen to breathe.

Everyone Needs Starch. Sugar and starch are what chemists call carbohydrates. Starch is an important food. It is the chief stuff in bread, potatoes, and all cereal foods. During digestion it is broken down into sugar, which is a simpler chemical substance. So whether you eat starch or sugar it is all the same in the long run because they both enter the blood from the intestines as the sugar called glucose. But when you eat starch, for example, in the form of

Digitized by Google

the National loaf, you obtain other useful things as well, such as Vitamin B and iron. And in potatoes you get Vitamin C.

Foods to Round Off the Corners. You probably know that the other two foodstuffs used by the body for energy and heat are fat and protein. Fat may be in the form of butter, margarine, milk, suet, dripping, herrings or salmon (fresh or tinned). Besides giving energy, fat also rounds off the corners of the body and sometimes makes them look attractive. It serves, too, as a food store and as an insulator against loss of heat. Protein—the lean of meat and the white of egg are protein (mixed of course with water)—is perhaps the most important of the three. Protein is the body builder. It is the principal ingredient in the billions of tiny cells which make up your body.

It may be said briefly that we eat starches, sugars, and fats for energy, and proteins so that we can build up the body and keep it in a good state of repair. Food experts say that animal protein is better for this purpose than vegetable protein (peas, beans, and oatmeal), and so call it " first-class ". You get first-class protein from meat, fish, eggs, liver, milk, and cheese, *and in one of these forms you should have some first-class protein every day.*

War has reduced our supplies of first-class protein, so plan to make the most of your rations. If you have meat or fish for dinner, don't have cheese as well. Cheese, in wartime anyhow, should not be treated as a savoury tit-bit. It is a good solid food consisting largely of fat and protein, and first-class protein at that. Drink your full ration of liquid milk, and use dried milk in your puddings. And while dried eggs are obtainable use them for cooking, and keep your shell eggs for egg dishes. Keep an eye and an ear open for the Ministry of Food's hints in newspaper advertisements and broadcasts ; they're scientifically planned to help to keep you fit.

Food for Blood and Bones. But fuel isn't everything in diet. You must have certain chemical elements like iron and calcium (or lime). Iron is necessary to make blood. If you don't eat enough iron you become anæmic. It is the iron that carries the oxygen in the blood. You obtain iron in various ways. It is present in the National loaf, in green leafy vegetables (especially spinach and watercress), in the yolk of egg, in liver and lean meat, and in peas and beans. If you become very anæmic the doctor may have to give you an iron medicine.

Calcium (*lime*) is important because it is the stuff from which bones and teeth are made. Your bones are alive. They, as well as other parts of the body, need calcium. Your muscles won't work efficiently without calcium. Without calcium the blood won't clot properly. Cheese and milk are good natural suppliers of calcium. When there is a shortage of milk, there is a risk that people will not obtain enough of this bone-builder in their diet. This may help you

Digitized by Google

to understand why Lord Woolton has taken the doctors' advice to increase the cheese ration and add calcium to flour.

Vitamins Protect You. Just as calcium and iron are present in sufficient amount in a well-mixed ample diet, so are the vitamins. It is a pity vitamins are labelled with the letters of the alphabet. It makes them seem unreal and mysterious. But they are real enough, being rather complicated chemical substances made up of carbon, hydrogen, oxygen, nitrogen, and sulphur, especially of the first three of these. The chemist can now manufacture some of them in his laboratory—Vitamin C for example.

We need very small amounts of the vitamins, and only very small amounts of them exist in foodstuffs. But without vitamins the fuel—sugars and fats—in your body will be wasted. They will burn badly and there will be a lot of smoke. Vitamin A, for example, protects the eyes. Vitamin B keeps the skin clear and the nerves steady. Vitamin C saves you from scurvy, and Vitamin D from rickets. Vitamin E helps you to be fertile, and Vitamin K stops you from bleeding when you shouldn't. No wonder doctors call foods rich in vitamins " protective " foods.

Now all these and other vitamins are present in natural foods and always have been. Unfortunately, it has not always been possible for people to eat the right kind of foods, or they have been ignorant of what to eat. What you fancy does not necessarily do you good.

How to Get Your Vitamins. Eat as much as you can of the protective foods. You buy these at the greengrocer's, the dairy, and the fish shop. Milk, butter, cheese and eggs are available in varying and restricted amounts. So be sure each member of the family has his or her full ration of them, and see that the children get the extra ration of milk the Government provides to meet their special needs. The same applies to the expectant mother. The manufacturers add the " sunshine vitamins " A and D to margarine, so this can be classed as a dairy food. Cheese is a useful food for children, and cooking doesn't take away its goodness.

Vitamin D is not found in many foods, though there is some in fat fish (like herring and salmon), so unless fish-liver oils are taken we have to depend for Vitamin D largely on the action of sunlight on the skin. Therefore full advantage should be taken of the cod-liver oil obtainable from the Welfare Centres for expectant mothers and children under five. Eat fish when you can, especially fat fish, and especially herrings.

How to Replace the Vitamin in Oranges. Now that foreign fruits like oranges are, to say the least of it, scarce, you must make the most of what there is at home. Oranges and lemons were valuable chiefly because of the Vitamin C in them. There is a lot of Vitamin C in the good old-fashioned " two veg.", potatoes and cabbage; and in tomatoes, watercress, parsley, broccoli, and swede turnip. If

Digitized by Google

enough of these vegetables are eaten there need be no fear of scurvy, so long as the vegetables are properly prepared and cooked. For children under five Vitamin C in the form of concentrated orange juice is obtainable from Welfare Centres and from local Food Offices.

How to Cook Your Vegetables. You can waste your Vitamin C if you don't cook your vegetables properly. Here are some hints on cooking vegetables. Obtain them as fresh as possible. Keep them in a cool place and avoid crushing or bruising them. Prepare them only just in time for the meal. If you soak them before boiling them, add salt (2 teaspoonsful to a pint) to the water. When boiling vegetables use only just enough water to cover them. Bring the water to the boil and add salt before you put the vegetables in. Put them in gradually to prevent the water going off the boil: *don't* add baking soda (sodium bicarbonate).

Boil the vegetables just long enough to make them tender, not a moment longer. Serve them at once. Don't keep them warming up on the hot plate, because the longer vegetables are heated the more Vitamin C is destroyed. Lastly, use the water in which the vegetables have been boiled for soups or gravy. Potatoes should be boiled or steamed in their skins.

Now that we are all digging for victory there should be plenty of vegetables. Don't cook them all, eat some raw every day as far round the year as possible. And remember that lettuce isn't the only salad vegetable. Mustard and cress, watercress, shredded cabbage, grated carrot, tomatoes, endive, young dandelion leaves, radish, parsley, and chives, are some of the vegetables that can go into the salad dish. From vegetables, cooked and raw, you get calcium, iron, and various salts and vitamins.

Wholesome Bread. Provided you take the largest amount possible of protective foods, you needn't worry much about what else you eat. In peacetime people tended to eat far too much sugar and refined cereals (including white bread). Wartime necessities should become peacetime habits. So when peace returns still go steady with the sugar, and still go on eating wheatmeal or brown bread. Russians eat black bread, and they're a tough lot. Wheatmeal bread, by the way, has safely been given to patients with stomach ulcers without upsetting their digestions.

Don't forget that food is meant to be enjoyed. The more you like it (without making a pig of yourself) the more good it will do you. You can't enjoy it to the full if it's badly cooked or badly served. Cooking is an art, and to cook well is something to be proud of.

Drink Enough Water. About 75 per cent. of your body is water. And if anyone talks to you about " dry bones " you can inform him that 25 per cent. of the weight of a bone is contributed by water. When sugar is burnt in the body, to yield energy and heat, it is

Digitized by Google

finally broken down to carbon dioxide and water. Three-quarters of the brain is water.

As has already been said, water is being lost at varying rates through the skin and the lungs, in the urine, and in the fæces. Water plays a vital part in all the chemical and physical changes in the body. Yet some people think it is just stuff to wash in.

Water is meant to be drunk. In fact you must drink it, or you would die of thirst. You should take some three pints a day. Most people like their water coloured rather than plain, even if the colour is only that of weak tea or bad coffee. Some people still like a glass of beer, though they will tell you that nowadays it is little better than coloured water. You can drink too much tea, too much coffee, too much beer. It can't be said that any of them do you any good. Too much always does harm. Few people drink enough water. So see that you get enough of it yourself.

6. Be Moderate in All Things

Drinks like tea, coffee, beer, gin, whisky, rum have their attractions, of course. A cup of tea often " bucks you up ". But alcohol may act as a poison ; it certainly does when an overdose is taken. A drunk person is a person poisoned with alcohol. The alcohol called " hooch " is such a strong poison that it blinds and even kills people. To take a glass of beer with a friend is a pleasant social custom. But don't delude yourself that beer does you good, because it doesn't.

Are We Smoking too Much ? Another overworked social custom is smoking. The consumption of tobacco went up by leaps and bounds at the beginning of the war. Tobacco may soothe the nerves, but it may also spoil the appetite and irritate the mouth, throat, and lungs. It can upset the digestion, and interfere with mental and physical efficiency. Two years before the war, in 1937, this country spent £150,000,000 on tobacco. There appear to be social virtues in smoking. It has certainly become a social habit, and in many cases a bad habit. Most people can quote examples of hale and hearty old men of 80 who have smoked all their lives without harm. And there is Mr. Churchill with his cigars. But these are exceptional men.

For the ordinary man and woman good health will not be theirs unless they smoke in strict moderation. King James I said of smoking that it is " a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black stinking fume thereof nearest resembling the horrible stygian smoke of the bottomless pit ". This was, of course, laying it on a bit thick.

Not a Cure for Nerves. There is no doubt that smoking too much

Digitized by Google

and drinking too much are often due to " nervousness ". The act of smoking seems to relieve a sense of strain—and in wartime everyone is living under some sort of strain. But, in excess, smoking makes the nervousness worse, apart from its harm to physical health. The effect of alcohol on the brain is to relieve stress and anxiety. As everyone knows, it makes a person less critical—of himself at all events. But the slave to drink gradually undergoes moral and physical degeneration.

In wartime it is inevitable that people should seek relief from strain: and there is nothing to be said against the occasional drink taken in moderation. The world would be a dull and colourless place if it were inhabited entirely by plaster saints eating dry bread and taking sips of plain water.

Health and Moral Responsibility. In wartime young men and young women are thrown into situations that encourage excess. The atmosphere of war is itself unhealthy, however much heroism it may bring out in people. Waste of lives, waste of materials, waste of money, however necessary these evils may be for the time, encourage a spirit of " Eat, drink, and be merry, for to-morrow we die ". There is much less of this spirit in Great Britain to-day than in the last war. We are more aware this time that what we are fighting against is evil. Each man knows that he is fighting for the freedom of others as well as for his own.

This growing sense of personal responsibility of each man and woman is one of the good things that has come out of the war. There is one thing that can knock this sense of responsibility sideways, and that is a " drop too much " of alcohol. A doctor has no desire to moralize about this, or to preach a sermon about it. His concern is with health, and ill-health or disease. He knows, for example, that the occasional " binge " often leads to an occasional " night out " between a man and a woman who, under the temporary influence of alcohol, lose their sense of responsibility. The doctor knows, too, that casual sexual relations often end up in venereal disease. Or to put it in another way, he knows that venereal disease is almost always the result of promiscuous sexual relationships.

The Causes of Venereal Disease. Although he cannot ignore the moral aspect of the question, the doctor is chiefly concerned about the effect of venereal disease on health and happiness. He knows that it is the source of untold misery. It would not be so bad if venereal disease affected only the person who caught it. The personal loss of health and efficiency is a severe penalty, but venereal disease may affect the unborn generation. The child of a parent with venereal disease may become blind, paralysed, crippled in mind and body, a pathetic and tragic witness to the irresponsibility of its father or its mother.

Let us be clear what venereal disease is. It is an infection, just as the common cold and pneumonia are infections. An infection is an

Digitized by Google

attack upon the body by germs, tiny living organisms so small that they can be seen only under the microscope. The ones that cause disease are parasites and live on the bodies of human beings and other animals. They get their food by destroying bits of what they live on. Sometimes their attack is so violent that the infected person dies.

There are two chief forms of venereal disease. One is called gonorrhœa (" the clap ") and the other syphilis (" the pox "). The germs that cause these two infections are very different from each other to look at. They injure the body in different ways. But in the beginning, with very rare exceptions, these germs attack the sexual organs, and they generally pass from one person to another during sexual intercourse. The infection is kept up in a community by promiscuous sexual intercourse.

In time of war there is nearly always an increase of venereal disease. This is a serious matter because, among other things, it immobilizes man and woman power. A hospital full of cases of gonorrhœa means loss of tanks, loss of aeroplanes, loss of guns. It also means loss of happiness, loss of health, loss of efficiency.

Doctors now have better ways of treating venereal disease, especially if patients will go to them at the earliest opportunity. Clinics for the treatment of venereal disease have been set up by public health authorities, and the confidence of the patient is strictly kept. A woman who is pregnant and believes she may have venereal disease should have a blood test to safeguard her future baby.

" Prevention is better than cure " is an old saying which is as true of venereal disease as of anything else. It is obvious from what has been said that venereal disease can be prevented in one way—by avoiding casual sexual intercourse.

Some Sex Problems. The sex instinct is very powerful, and in any form of society, savage or civilized, it is regulated by many customs and attitudes which make it difficult to discuss with freedom and reason. The modern world tends to become more artificial and complicated ; the more artificial our lives become the greater is the strain upon so natural an instinct as sex. Men and women differ widely in their make-up, in the way they react, in the way they have been brought up, in the standards they adopt. The Talmud, that collection of ancient Jewish rules of human conduct, says : " Love thy wife as thyself ; honour her more than thyself. He who lives unmarried, lives without joy. . . . All the blessings of a household come through the wife, therefore should her husband honour her ". Family life is the basis of national life. In family life is the flowering of the sex instinct.

Anyone who is worried about sexual problems should go to his or her family doctor and talk to him frankly about them. Open discussion is good for the soul. Often enough difficulties and worries are greatly exaggerated in the mind of the worrier because he or she is not rightly informed about the matter in question.

Digitized by Google

7. A Word to Those Who Worry

Generally speaking, before the war there was an increase in the number of " worriers ", of people who felt anxious about nothing in particular. During the war there seems to have been fewer of these people, less personal anxiety. This may be because the real danger we all face is bigger than the imaginary dangers that make people nervy. And there is a closer feeling of unity, of being together.

What Makes You Worry? It is usually the sensitive person who becomes nervy and anxious. It is not cause for shame. Such people can help themselves to some extent by seeking within themselves the cause of their anxiety. It may be envy, jealousy, or hatred of real or imaginary persons. Suspect in yourself unreasonable hatred of another person or of an institution.

Some people, as you can observe, hate any kind of authority, whether it is in the shape of a person, an institution, the Government, the " ruling class ". Fortunately, for the moment Hitler, Mussolini, and Nazism are useful (and incidentally " reasonable ") targets for this kind of hatred. In his consulting room the doctor constantly sees the destructive effects on a person's mind, and indeed body, of envy, jealousy, hatred, and " all uncharitableness ". He observes these, mind you, not as a moralist but as someone trying to find out what is wrong with this man, that woman.

You can take heed of this lesson and apply it to yourself. You will agree that the person who is kindly and tolerant is happier than one who is not. It is quite true that it is easier for some people to be kindly and tolerant. " It is their nature ", as we say. Seeking happiness, you will strive to be kindly and tolerant. If you find this difficult, watch in yourself for the first signs of hate and envy, and nip them in the bud. Try, too, to understand the cause. If you find this difficult, talk things over with your doctor, or at least with someone who is a sympathetic listener.

Worrying Parents Make a " Nervy " Child. Doctors believe that the seeds of " nervousness ", and therefore of future ill-health, are planted in childhood. It is not so much the parent who is deliberately harsh, the obviously bad parent, who is the cause of the nervous child. Such parents are the exceptions. The " nervy " child is often made so by a parent who is over-anxious, over-conscientious; the parent who worries about every little detail, and is always expecting that something will go wrong. You know the old saying " Care killed the cat ". Of course the child wants care—but not too much. A child is an unstable little creature, quickly passing from laughter to tears.

What is important is to give the child a feeling of security, and this he finds in a constant atmosphere of affection and trust, tolerance

Digitized by Google

and sympathy. Within this framework of security given him by the love of those around him the child needs as much freedom as is safe for him. Some parents like to encourage a child to feel dependent on them. If this goes too far the child may never quite grow out of this dependence. He will always be " tied to his mother's apron strings ". So when you see your child (or your foster-child if you are one of the good samaritans who are caring for evacuees) taking a new and independent line of action that is not harmful, encourage him to go his own way, helping only when it is necessary.

Remember, an unhappy child will probably also be an unhealthy child ; conversely, without health a child will not be happy.

There is one form of interference with a child's dignity that is still popular—this is corporal punishment, or, more commonly, " a good smack ". A man skilled in the training of dogs has declared that a dog can be brought up by kindness and that there is no need to beat it. What good can you hope to achieve by physical punishment except obedience inspired by fear ? But a long moral lecture may be even more cruel than a quick slap.

A Case for Patience and Tact. In the early days of this war, when children were being evacuated to all parts of the country, there was a big outcry because so many of them were found to wet their beds. Punishment did not do these children any good. They still went on wetting their beds. In some the cause may have been physical. In others the cause was psychological.

In very early childhood the first thing a child, or infant, has to learn is to use the chamber. The mother teaches the infant this by putting it on the pot at regular intervals, and praising it when it uses it. Some children are quicker at learning this new trick than others. But there is really nothing to boast about in this. The child that is too perfect won't necessarily be happy. So a mother should not be worried or anxious because her child does not become " house-trained " all at once. In fact, if she does get worried and shows it, the child will probably go on wetting the bed and dirtying the napkin for a much longer time. A child should not be scolded or be told that he is dirty if he makes a mess when he is supposed not to—supposed not to, that is, according to the ideas of grown-up people. The child doesn't think in the same way as you do. Why should he ?

Mother and Child. The mother has a very great responsibility, and bringing up and caring for a child call for endless patience. A child's future happiness is in its parents' hands, especially the mother's. No trouble should be too great, and the young mother has to realize that she must give up many of her personal pleasures and much of her freedom to devote to her children. But this is not to mean that a mother must always be interfering with her child, must always be

Digitized by Google

pursuing the child with " do's " and " don'ts ". This only exhausts her and the child. Unfortunately some mothers have to go out to work to make ends meet and so have not the time to give to their children. And in wartime there always arises a demand for labour of every kind, but the Government has refrained from directing mothers into war work and has left it to them to volunteer. Don't forget to go to your doctor or the Child Welfare Clinic if you have doubts or anxieties about your child's health.

Always to be tolerant and kind to a child does not mean that you should spoil him, and let him do what he likes. There is nothing worse than a spoilt child. But parents and guardians too rarely appeal to a child's reason. More often they act as " dictators " and think that " Do it because I tell you to " is a good enough reason. It is a thoroughly bad reason. A child has a very sharp sense of justice, and if you once behave unfairly to him he will soon find out and bear you a grudge. Of course it takes more time to reason with a child. But in the long run it pays to reason patiently and to be absolutely just in all your dealings with him. It is the example you set him that will speak louder than any words.

8. Fight Disease with Hygiene

People have complained that some of the children evacuated from the slums were dirty and uncared for. The condition in which some of them had to live did not make it easy to be clean. But without cleanliness perfect health is not possible.

There were two conditions that made doctors think people weren't so clean as they should be. The first was lousiness, and the second was scabies, or " the itch ". In themselves the little beasts responsible for these conditions are unpleasant and cause a lot of discomfort and irritation to the person they attack. Irritation of the skin makes the patient scratch, and so sores begin. An itching skin often means a restless night and interference with sleep.

But these pests can be more serious than this. There is a very dangerous disease called typhus, which during this war has been spreading in Europe. It has not been a serious problem in this country for something like 70 years. People catch typhus by being bitten by lice which have sucked the blood of a patient with typhus. So if a large number of people are lousy, one or two patients with typhus in their midst may start an epidemic of the disease.

Parasites Succumb to Cleanliness. A louse is an insect without wings ; but nevertheless it gets about with remarkable ease. Lice live on human blood. They bite through the skin of their victims, " spit " on the wound thus made, and then suck up the blood. Some

Digitized by Google

lice attack the body and others the head. The head lice lay their eggs in the hair of the victim, close to the scalp. Those eggs are called nits. They look rather like scurf, but you can't blow them off, as they stick firmly to the hair.

There is one simple remedy against lousiness—and that is cleanliness. This means a bath and a thorough wash all over at least once a week. A child's head must be washed weekly, too, and thoroughly combed and brushed every night.

A large number of evacuated school-children were found to have nits in the hair. It wasn't always their fault or the fault of their parents. They often caught the lice from other children. If your child is unlucky enough to have nits in the hair, try to get rid of them, first of all by washing hair and scalp thoroughly. Then, when the hair has been dried, go through it with a fine comb specially made for the purpose. Ask your chemist for a fine tooth comb, preferably a " Sacker " or a " Binns " comb. Any old comb won't do. When you comb, remember to go through the hair close to the scalp, for it is there the lice lay their tough little eggs. If you don't succeed in getting rid of them seek advice from a Health Visitor, District Nurse, or School Nurse.

How to Avoid Infection. Scabies, or " the itch ", is a skin disease caused by a tiny spider-like creature called a mite. The female burrows into the skin and, in the track made, she lays her eggs. The eggs develop into other mites. The itch mite goes for the soft skin between the fingers, on the front of the wrist, in the arm-pits, or between the buttocks. It avoids the face and the scalp.

At the moment, thousands of people all over the country have scabies. The mite passes from one person to another, chiefly as a result of close personal contact between these two people—for example, when they sleep in the same bed. So the problem is to find all those who have scabies and to treat them properly so that they shan't hand on their itch mites to others. If you, or any of your family, have the itch, please go to your doctor now. Like lousiness, it is a family disease, and it is wisest to have the whole family or household examined and treated for it at the same time. It is wise, too, to see that each member of the family has his or her own towel, hair-brush, and comb—and uses no other.

9. Stop Germs from Spreading

It is easy to see that if you have itch mites burrowing into the skin of your hand it is a fairly simple matter for the mite to move on to someone else and begin another lot of burrows. It is not so easy to see how some other infections spread.

Digitized by Google

To understand how they spread is to know of one way to prevent infections. For instance, some types of tuberculosis are caused by drinking milk which has the tuberculosis germs in it. It has been estimated that about 2,000 people, children mostly, die yearly because of drinking milk from tuberculous cows. These deaths could be prevented by pasteurising or boiling milk, or by stamping out tuberculosis in cattle. If, therefore, you can't obtain pasteurised milk (especially if you live in the country) then see that at least for the children it is all brought to the boil before it is consumed.

Tuberculosis is not the only disease spread by raw, so-called "pure milk". Diphtheria, scarlet fever, typhoid fever, sore throat, and an unpleasant disease called undulant fever may also be spread by unboiled or unpasteurised milk. As short a time ago as 1936, in Bournemouth, 718 persons caught typhoid from drinking raw infected milk; 51 of them died. After that the milk was pasteurised and the epidemic ceased. If all the milk in the country were pasteurised, doctors would have much less to worry about—and incidentally, more time to teach people how to keep well.

How the Germs Travel. Diphtheria and scarlet fever, as you may know, usually begin with a sore throat; it is more often complained of in the latter disease than in the former. These diseases are the result of infection with germs—very very much smaller things than lice and mites but just as alive. Although these infections may spread through a community by means of infected milk, this is not the usual way. The germs of diphtheria and scarlet fever attack the throat and make it inflamed. Once settled there they multiply, producing thousands upon thousands of other germs. All that is needed is a cough or a sneeze, and out these germs will go into the air, to be breathed in by someone whose throat will probably be infected as a result.

If a child at school beginning to have diphtheria sucks his school-pen and another child also sucks it, then this is another way the germ can go on its travels. If a milk-maid with a sore throat coughs into the milk then everyone who drinks that milk (unless it is subsequently boiled or pasteurised) runs the risk of catching the sore throat—or, rather, the germs that cause it.

Germs that Attack the War Effort. It is on careless coughing and sneezing that a large number of germs rely for getting about the place—that is, going from one human being to another. This is how they travel in cases of whooping-cough, measles, chicken-pox, pneumonia, tuberculosis of the lung (consumption); and—last but not least—influenza and the common cold. Altogether influenza and cold infections cause a vast amount of illness and human suffering and unhappiness, and a vast loss of hours of work to the national war effort. The Chief Medical Officer of the Ministry of Health has calculated it as equivalent to the loss of 3,500 tanks,

Digitized by Google

1,000 bombers, and 1,000,000 rifles in one year. It may not be possible to get rid of all " droplet " infections ; they are more difficult to control than the infections—such as typhoid fever and cholera—that used to come from a dirty water supply.

Don't Pass Your Cold On. One way to stop germs spreading from one person's throat to another's is to isolate the infected person. If everyone at the very first sign of a cold were to go promptly to bed and stay there for one or two days, then the common cold would not be so common as it is, and everyone would lose much less time at work. The usual thing that happens is that a girl goes to her office with a streaming cold, gives it to most people with whom she comes in contact (in bus or tube or tram, as well), and on the second day sends a message to say she is worse and cannot come. By this time, of course, she has infected a large number of people, and has made her own cold worse by going to work. And she will end up by losing more time from work than if she had gone to bed straight away.

There is an obvious way of stopping germs getting from your mouth and throat into the air around you—and that is to cover your mouth and nose with a handkerchief every time you cough or sneeze. To cough or sneeze without doing this is a rude and disgusting habit, and it is amazing how many people, through thoughtlessness, have this habit. A sneeze may, of course, take you very suddenly, and you have to cover your mouth and nose with your hand.

There is a peculiar thing about germs, and that is that dangerous germs may lodge in your throat without doing you any harm. But they may prove harmful to other people. Those who have dangerous germs about their body without being ill are called " carriers ". So, you see, it is important to cough and sneeze into your handkerchief and *not* into the air, whether you have a cold or not.

Inoculation May Save Your Child's Life. Another way of preventing infection is by inoculating or vaccinating people against certain germs. In the last war (and in the present one) our soldiers were inoculated against typhoid fever, and they consequently suffered much less from this than they did in the South African War. Many of the civilian population have been inoculated against typhoid in the past two years because the risk of contamination of the water supply is greater during wartime. Fortunately typhoid fever has not shown any increase.

Diphtheria is another disease doctors are trying to stamp out by inoculation. There are about 60,000 cases of diphtheria, mostly in children under ten, in Great Britain every year. Out of this number about 3,000 deaths occur—mostly of children under five. Inoculation against diphtheria—diphtheria immunization, as it is called—is absolutely safe and practically painless. It means little more than the prick of a needle on two occasions. Diphtheria could be stamped out if all the children in the country, or even four out of five of them,

Digitized by Google

were immunized against it. It is the best present you can give your child on his or her first birthday, but every child between one and fifteen should be protected. Occasionally it does not give complete protection, but if a child incompletely protected is infected the attack is usually much milder.

Doctors have spent years and years in finding the best stuff and the best ways in which to use it. They have now got it, and that being so you should take advantage of it to save illness and lives, and also the services of the doctors and nurses, so urgently needed for war purposes. Another disease of children against which inoculation is being perfected is whooping-cough.

If you have a child or children not immunized against diphtheria, have it done now by your family doctor, or by arrangement with the Health Department at your local Council's Offices, which will do it free of charge. Don't let your children go through the winter exposed to the risk of this infection. Prevention is better than cure.

10. Help Yourself to be Well

You are saved from all sorts of infections and poisonings by an elaborate Public Health Service which you hardly ever hear of until something goes wrong. Your food and water are kept pure by a system of inspection, regulation, and control that tries—and very successfully—to prevent any harm coming to you. There are free welfare centres to help mothers, expectant mothers, and children to keep fit. Many Approved Societies will help you with the cost of glasses and with dentists' fees; if you need these things, see if your Society will help you to obtain them. But you are asked to do something yourself as well—not for somebody else's benefit but for your own. By helping yourself to keep well and free from infection you are, of course, helping other people at the same time.

What you think and how you think about your health is important. Obviously no one who is always brooding over disease can really feel well or be well, even though his organs are perfectly sound. In just the same way, a person who is ill, or has some physical disability, will feel better if he makes the most of what health he has got than one who gives in to his disability. And so, too, the man who thinks in terms of health and healthy living will feel better and fitter than the man who thinks in terms of disease.

Don't think that taking thought about yourself is morbid, "unhealthy". The human body is a marvellous piece of construction. The human mind is a most delicately adjusted mechanism. And this war has shown us once more that both are, at the same time, amazingly tough. But the young men who won the Battle of Britain did

Digitized by Google

not fulfil their heroic task with minds and bodies that were untrained. To get the most out of life you must put the most into it. To live, to love, to laugh, to labour to the fullness of your capacity, get fit and keep fit.

Remember, too, that good health is not just something the young have. Each period of life has its standard of good health. The health of old age is ripeness, mellowness. The health of youth is energetic and expansive. Whatever your age, strive for the best health available to you.

Seek Health with Eagerness. The average man wants a job he is interested in, to be decently paid for it, to have a wife and family, friends, hobbies, and leisure in which to enjoy them. These, in their different mixtures, bring him happiness. Happiness, satisfaction, is what he aims at. Without good health full happiness cannot be obtained. If you want to reach happiness, to be complete, seek health with the eagerness with which so many foolish men have sought gold. Good health is the real riches: it is up to you to get it and to keep it.

The pursuit of good health can be an adventure. And in this adventure all the doctors and the health services in the country are there to help you. Don't think you are too old to begin. In this war we have all decided that this country is worth dying for if need be. It is also worth living for and working for, and to do this to the top of your bent you must be as fit as you can. And just how fit you can become you probably haven't yet found out.

Digitized by Google

Index

	Page
Alcohol, effects of	13
Anæmia, causes of	9, 10
Aperients	3
Appetite, and smoking	13
Approved Societies	22
Bathing	6
Baths, for sleeplessness	3
Beans, food value of	10
Bed-wetting	17
Beer	13
Beri-beri	8
Beverages	3, 13
Black-out, and ventilation	4
Bleeding, vitamin to prevent	11
Blood, circulation of	7
—foods for	10, 11
—functions of	9
—stream	10
—test	15
Bones, foods for	10, 11
Bowel action	2
Brain, foods for	9
Bread, food value of	10
—wheatmeal	12
Breakfast, punctuality of	2
Broccoli, food value of	11
Butter, food value of	10, 11
Cabbage, raw, food value of	12
Calcium, necessity for	10, 11, 12
—sources of	10, 11
Carbon dioxide	9
Carrot, raw, food value of	12
Cereals, food value of	9
Change, necessity for	6
Cheese, best use of	10
—food value of	10
Child Welfare Clinics	18
Children, bed-wetting in	17
—cleanliness of	18
—cod-liver oil for	11
—evacuee	17, 18
—fruit juices for	12
—health of	16–18
—house-training of	17
—milk allowance for	11
—nervousness in	16
—parents and	16–18
—Public Health Services for	21, 22
—sleep needed by	4
—sunbathing for	6
—vaccination of	21, 22
Chives, food value of	12
Circulation, to improve	5
Cleanliness	18
Cod-liver oil, food value of	11
Coffee	3, 13
Cold, and sleeplessness	3
—infections	20, 21
Combs, cleanliness of	19
Complexion, vitamin for	11
Constipation	3
Cooking vegetables	12
Corporal punishment	17
Coughing, germs from	20, 21
Cycling	7
Dandelion leaves, food value of	12
Diet, balanced	8
Digestion and smoking	13
Digging as exercise	7
Diphtheria, a cause of	20
—mortality from	21
—prevention of	21
District Nurse	19
Doctor, when to consult	3–4, 8, 14, 19
Dripping, food value of	10
Eggs, food value of	10
Elderly people and sunbathing	6
Endive, food value of	12
Energy foods	8, 9
Exercise	6–8
Expectant mothers, milk for	11
——public health services for	22
Eyes, vitamin for	11
Family life	15
Fatness	7, 8
Fats, necessity of	8, 10
Fertility, vitamin for	11
Fish, food value of	11
Flour, food value of	11
Foods, importance of choosing	8–12
Fresh air	3–5
Germ carriers	21
Germs, to combat	19, 22
Green vegetables, food value of	10
Hair brushes	19
Health and happiness	17, 22–23
—Visitors	19
Heat of the body	9
—sources of	10
—stroke, a cause of	5
Herrings, food value of	10
Holidays	5, 6
Immunisation	21, 22
Independence in children	17
Infections	14, 19–22
Influenza	20
Inoculation	21–22
Iron, sources of	10, 12
Lice	18
Lime, see *Calcium*.	
Liver, food value of	10
Margarine, food value of	10, 11
Meals, regularity of	2
Measles,	20
Milk, best use of	10
—children's allowance	11
—dried	10
—food value of	10
—Government allowances of	11
—infections from	20
—mothers' allowance of	11
Ministry of Food	8
——broadcasts	10
Moderation, importance of	13–15
Moral responsibility	14
Mothers, and National Service	18
—in war work	18
—milk allowance for	11
—Public Health Services for	22
Muscles, exercise for	7
—food for	10
Muscular rheumatism	7
Mustard and cress, food value of	12
National Health Insurance	4
—loaf, value of	12
Nerves and alcohol	13
—and tobacco	13
—vitamins for	11
Nervousness in children	16
Nicotine, effects of	13

Digitized by Google

	Page
Nits	19
Noise and sleeplessness	3
Orange juice, allowance of	12
—vitamins, substitutes for	11
Oxygen, functions of	9, 10
Parents and children's health	16, 17
Parsley, food value of	12
Pasteurised milk	20
Peas, food value of	10
Potatoes, food value of	10, 11, 12
—to cook	12
Protective foods	8
Protein, need for	10
Public Health Services	21, 22
Radishes, food value of	12
Rationing and balanced diet	8
Raw foods, value of	12
Recreation	6-7
Regularity, importance of	2–4
Respiration	9
Rest	2, 7
Rickets	5, 8, 11
Routine	2
Rowing exercise	7
Salads, food value of	12
Salmon, food value of	10
Salts in vegetables	12
Scabies	19
Scarlet fever	20
School Nurse	19
Scurvy	8, 11
Seawater bathing	6
Sex problems	14, 15
Shoes for women	7
Sleep, hours required	3, 4
—regularity in	2–4
Sleeplessness, remedies for	3–4
Slimming tablets, danger of	8
Smoking, excess	13
Sneezing, and germs	21
Sore throat, a cause of	20
Spinach, food value of	10
Spirits, effects of	13
Starch foods, need for	9
Stomach disorders, causes of	2–3
Suet, food value of	10
Sugar, food value of	9
Sunbathing precautions	5, 6
Sunburn, to avoid	6
Sunshine, value of	5
"Sunshine" vitamins	11
Sunstroke, to avoid	6
Sweat, function of	5
Swede turnip, food value of	11
Sweets, food value of	8
Swimming	6, 7
Tea	3, 13
Teeth, foods for	10
Temperature, fluctuations of	5
—healthy	5
—ideal room	5
—normal	5
Thinness	8
Thyroid tablets	8
Tobacco	13
Tomatoes, food value of	12
Tuberculosis, a cause of	8, 20
Typhoid fever	20, 21
Typhus	18
Ultra-violet rays	5
Underfeeding	8
Undulant fever, a cause of	20
Vaccination	21–22
Vegetable water, to use	12
Vegetables, raw, value of	12
—to cook	12
Venereal disease	14–15
——causes of	14–15
——clinics for	15
——in parents	14
——pregnancy and	15
——prevention of	14–15
——treatment of	15
Ventilation	3–5
—black-out and	4
Vitamin A	11
Vitamin B	10, 11
Vitamin C	10
Vitamin D	5, 11
Vitamin E	11
Vitamin K	11
Vitamins in vegetables	11, 12
Walking	7
War effort, and illness	20
War work and health	3, 6
Water, importance of	3, 13
—purification of	22
Watercress, food value of	10, 12
Welfare Centres	11, 22
Wheatmeal bread	12
Whooping cough	20, 22
Women, shoes for	7
— thinness in	8
—Health Services for	22
Work, regularity in	2
Worry, causes of	16
—sleeplessness and	3

To be purchased from His Majesty's Stationery Office at: York House, Kingsway, London, W.C.2; 120 George Street, Edinburgh, 2; 39/41 King Street, Manchester, 2; 1 St. Andrew's Crescent, Cardiff; 80 Chichester Street, Belfast; or through any bookseller.

Wt. 2782. W.P. Ltd.

S.O. Code No. 70-416*

Digitized by Google

Do You Want Help . . .

About National Health Insurance?

Ask the National Health Insurance Inspector for your District. The Post Office will give you his address.

Because You are an Expectant Mother?

Go to your local Ante-Natal Clinic. (A Health Visitor or the Public Health Department at your Town Hall will give you the address.) A Doctor, Midwife or Medical Officer at the Clinic will tell you how to get

EXTRA MILK — COD-LIVER OIL (sometimes in capsule form)

EXTRA EGGS — FRUIT JUICES

EXTRA COUPONS FOR THE LAYETTE

To get Extras for Your Children?

Your Infant Welfare Centre or your local Food Office will supply you free, or at a cheap rate, with—

FRUIT JUICES — COD LIVER OIL
For Children under 5

Be sure to give your children these; they contain valuable vitamins. For details of extra milk and eggs ask at your Food Office or Infant Welfare Centre.

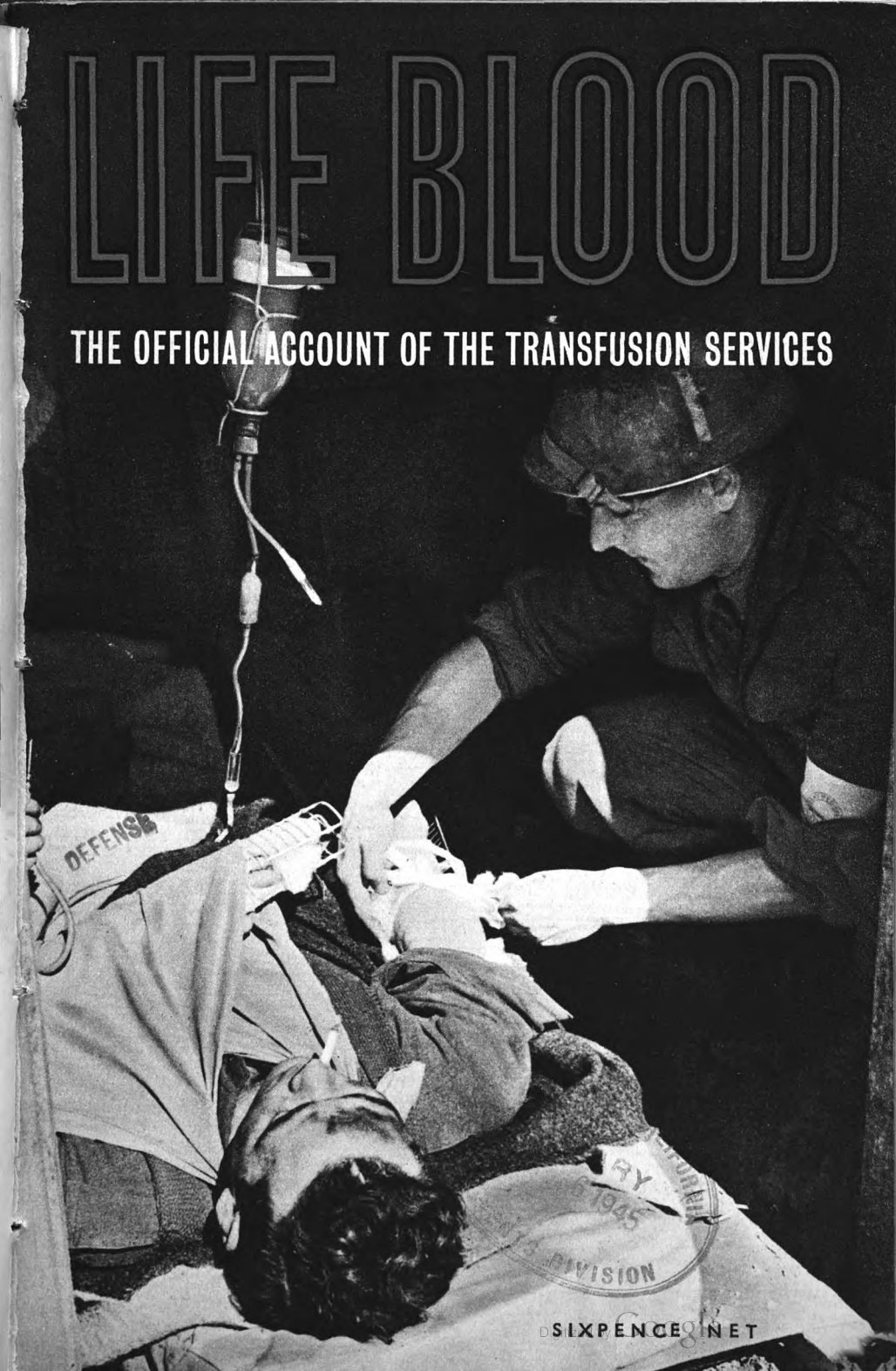
To Protect Your Children from Diphtheria?

You can have your children immunised free of charge. Your Doctor, District Nurse, Health Visitor, local Infant Welfare Centre or Public Health Department at the Town Hall will tell you how. Or, if your child is old enough to go to school, ask the school-teacher to arrange it for you.

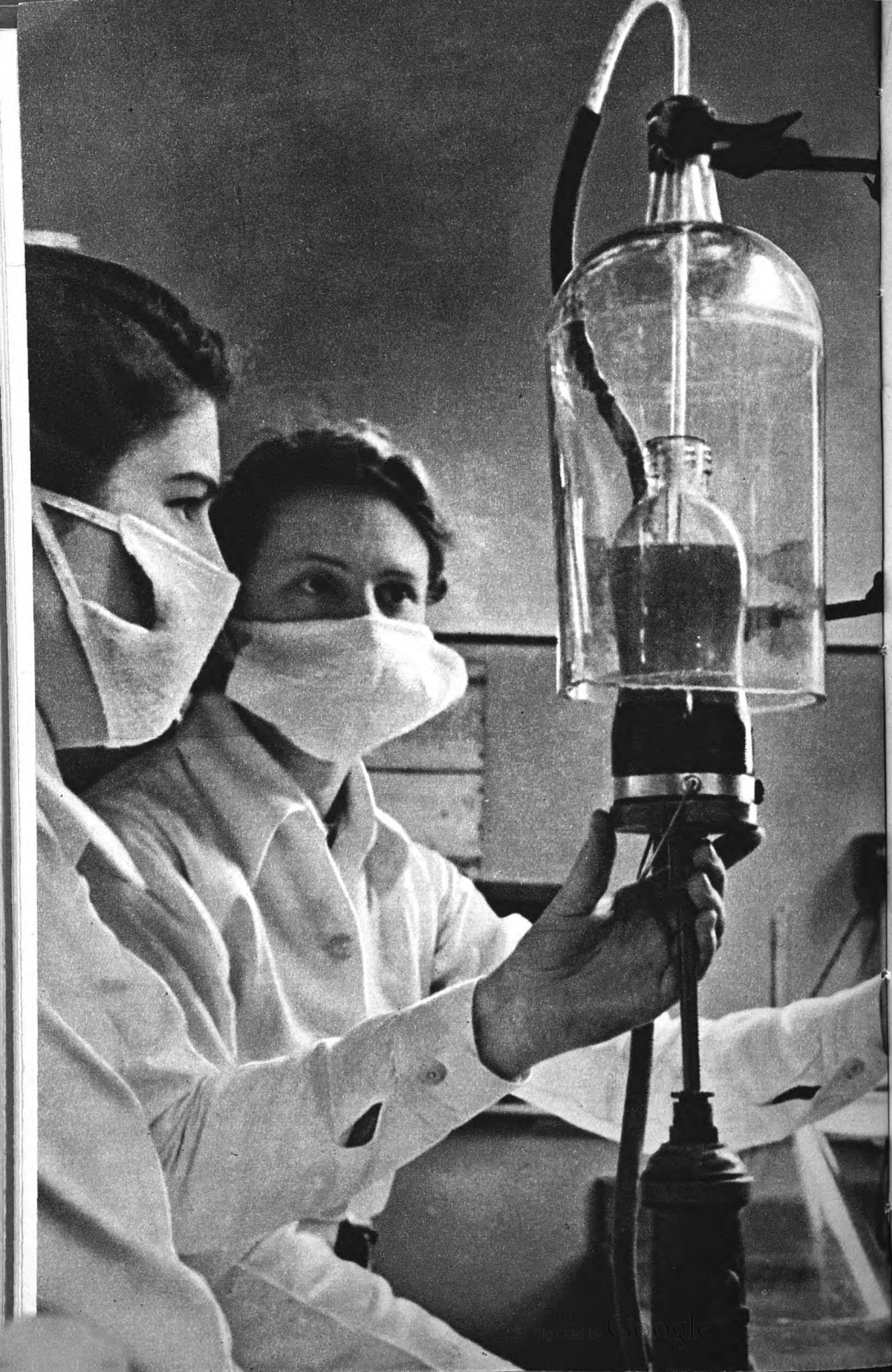
Digitized by Google

LIFE BLOOD

THE OFFICIAL ACCOUNT OF THE TRANSFUSION SERVICES



SIXPENCE NET


Digitized by Google

Life Blood

The Official Account of the Transfusion Services

Prepared for the Ministry of Health

and the Department of Health for Scotland

by the Ministry of Information

LONDON: HIS MAJESTY'S STATIONERY OFFICE 1945

Digitized by Google

Contents

1 From Blood-Giver to Battlefront *page* 3

2 What is Blood ? *page* 7

3 Transfusion : A Life-Saving Service *page* 11

4 Blood Relations : The Story of the Blood Group *page* 16

5 How Blood is Given *page* 20

6 The Secret of Plasma *page* 22

7 The Gift Works Miracles *page* 27

The 21 illustrations in gravure will be found between pp. 16—17

In no cases have the real names of the donors and recipients mentioned in this book been given.

To be purchased from His Majesty's Stationery Office at York House, Kingsway, London, W.C.2 ; 13a Castle Street, Edinburgh, 2 ; 39-41 King Street, Manchester, 2 ; 1 St. Andrew's Crescent, Cardiff ; 80 Chichester Street, Belfast ; or through any bookseller.

CROWN COPYRIGHT RESERVED.

PRICE 6D. NET. S.O. CODE NO. 70—448*.

Digitized by Google

1 From Blood-Giver to Battlefront

WHEN, on the morning of the 6th June, 1944, the news reached every home, office and factory in Britain that the invasion of France had begun, three questions came to our minds. How will it turn out? Will the casualties be very high? Will *he* come through all right?

There were many casualties; but far fewer than had been expected. One fact stands out—many wounded men were saved on the Normandy beaches who would have died in similar conditions in the last war. And one of the chief reasons for the low death-rate among casualties was that the men in the landing craft, the ships, the transport planes and the gliders took with them blood given by men and women in towns and villages all over Britain. Strapped into the equipment of the medical units of the paratroops and all other assault units were bottles of the blood product, plasma, and transfusion sets, in waterproof boxes. Transfusion Officers with the assault troops carried waterproofed instruments and dressings, so that, without waiting for their special lorries to be beached, they could set to work dripping life blood into wounded men.

Soon after the transfusion teams had waded ashore came Field Transfusion Unit lorries, equipped with refrigerators. In the refrigerators were 1,100 pints of fresh, whole blood. Blood plasma was also carried in other military vehicles—slung on the underside in containers which in the ordinary way hold trench mortar shells; four bottles and two transfusion sets took the place of three shells.

So not only the thoughts and hopes of those at home went with the fighting men to Normandy. Their gifts of blood went too. Here are two of the first messages telling how that blood was used. The first is from a Field Transfusion Unit Officer:

"We arrived at the appointed time without mishap. We were running our resuscitation ward in the local Mairie within an hour of arrival. My two orderlies have proved themselves extremely efficient. We were too busy to keep any records the first forty-eight hours, but at the end of that time I had about a hundred empty bottles which had contained blood or plasma—rather more the latter than the former. The refrigerator is running well. One of the first casualties I saw was an old friend with a penetrating wound in his chest. He was doing quite well when I last saw him."

The second message is from an Advanced Dressing Station:—

Digitized by Google

" A Highlander who had been lying in a field for three days with a shell splinter in his chest before the stretcher bearers found him was pulseless when admitted. At first the doctor despaired of his life. A Transfusion Officer decided to give him a transfusion. After he had been given four pints of blood, he revived and started to relate his experiences. . . . A lance-bombardier who had had both legs shattered by an 88 mm. shell was given a transfusion within fifteen minutes of becoming a casualty."

As the troops fought their way inland, supplies of blood and blood products followed them, and continued to follow them day by day. More plasma, in round wicker baskets, was dropped by parachute to airborne troops and isolated units.

The invasion force's first reinforcements of whole blood, carried in insulated boxes on landing craft, began to cross to France a few hours after the invasion. On D + 14, daily air transport began. Blood given by civilians in England one day has sometimes been used on the battlefield the next.

Plasma was still sent by sea. Before D-day, blocks of maintenance-supplies had been built up at an Army medical store in England. Each block represented the estimated daily needs of plasma for the whole invasion force. Every day after D-day, one of these blocks was transported to the beaches; and all the way to Germany, supplies of blood and plasma have followed the fighting men.

No force has ever been better equipped for transfusion (or for other medical services) than the Army of Liberation. The methods of carrying the blood and transfusion sets were improved and elaborated as the result of experience gained in the Sicilian, Salerno and Anzio landings. Other changes were made in the organisation because of the nearness of the battleground to the home base. For instance, more refrigerated whole blood was used in proportion to the blood products, dried and liquid plasma, than in the campaigns in Italy, the Western Desert, Greece and Crete.

Transfusion on the Sicilian Beaches

Let us look for a moment at the part blood transfusion played in the first invasion of Hitler's " Fortress of Europe "—on the 10th July, 1943.

One in thirty of the first 300 men to land on the Sicilian beaches was an R.A.M.C. man, carrying on his back a tall, round tin containing a pint of liquid plasma and a transfusion set. Although the opposition was less than had been expected, casualties soon began to come in to the improvised first aid post. Some of these men had suffered damage to arteries, or had had their legs fractured by machine-gun bullets. Within an hour of the first men coming ashore, serious casualties of this kind were receiving transfusions. In almost every case the

Digitized by Google

seemingly lifeless body began to revive. It was like putting a half dead flower in water on a hot day.

Meanwhile, a party of sixty men forming a Field Service Unit had landed more elaborate equipment from a special boat. An hour or so later a really large dump of medical stores had reached the shore. Among these stores were 300 bottles of plasma. They were followed by the Field Transfusion Unit and the Casualty Clearing Station ; and off-shore lay a hospital ship with 200 pints of blood held in reserve. As the advance continued, the R.A.M.C. men kept well up with the foremost parties. Wherever resistance was met, they at once looked round for shelter—perhaps a half-ruined cottage or an overhanging rock—and established a first aid post ready for action. The work of saving life in the midst of death and destruction went on. . . .

The Blood-Givers

It is four o'clock on a Thursday afternoon in a small town somewhere in England. The scene is a bare Parish Room, nothing very interesting about it, except perhaps the pockmarks on the plastered walls and the patches in the roof, souvenirs of some night of blitz.

A few people are walking up the chipped steps, each with a little card in his or her hand, and taking their places on a row of chairs, in front of which is a low screen hiding the rest of the room. They glance at one another, and one or two nod or even (though they have never been introduced) go so far as to pass the time of day.

A careless observer might suspect that these are applicants for a job of some sort—though it is hard to imagine what job could be suitable at once for a large, middle-aged woman, a soldier, a workman, a young red-haired girl of about twenty, an elderly man with an A.R.P. badge and a limp, and a railway goods guard who has brought his lamp along with him, as he proposes to go on duty directly his visit is over.

Though it is nobody's business, let us give a few facts about these people, just sufficient to explain why they have come here, why they are about to lie down on beds, to roll up their sleeves and each to have a pint[1] of blood removed into a bottle.

The large, middle-aged woman is Mrs. Alice Edwards, a widow, with one son in the Army, a daughter in the A.T.S. and three others at home. Mrs. Edwards can always be relied upon to find half-an-hour here and there to help win the war. That is why she answered the appeal for blood donors a year ago. Besides, she found after her first donation that a little blood-letting seemed to do her good, to overcome a feeling of heaviness, and she comes now every three months—" for her own health ", so she says.

[1] Throughout this book the blood gift is referred to as " a pint ". In practice it is usually three-quarters of a pint.

Digitized by Google

The soldier, Corporal Evans, is home on leave. He can never forget how his best friend, just before they were evacuated from Dunkirk, had the lower half of his body crushed by some falling masonry. The corporal had helped to get him to a dressing station and had watched on the beach while the medical officer dripped in a pint of blood. The thing that stuck in the corporal's memory was the way in which Tom's almost lifeless form revived as some unknown person's blood began to refill his veins. Ever since then, whenever he comes home on leave, Corporal Evans repays the debt for his friend.

The workman is known to nearly everybody as Jim. Jim and his mate were working overtime repairing a sixty-foot-deep tank in a munitions factory. It was hot work, but if it hadn't been for the long hours, Jim's mate, the steadiest worker you could wish to meet, wouldn't have misjudged his balance and fallen in. As it was, Jim's mate was picked up by Jim and some others at the bottom of the tank, with his pelvis broken, the base of his skull fractured, three or four ribs crushed in, and a good many face wounds, including a slit from end to end of his nose.

When they got Jim's mate to the County Hospital he had neither breath nor pulse, but it was decided to try the effect of a pint or so of plasma. Earlier this Thursday afternoon Jim had been to see his mate, still lying in the hospital. All the bones were healed, he was able to sit up in bed, and to talk about being back on the job. His life had been saved by the blood of no fewer than twenty-three donors. He was not only alive, but going to be useful again. Sooner or later a plastic surgeon would give him a new nose but, as he told Jim, " I've had so much done to me that I don't want anything else done yet ". Jim has come to return some of that blood. " After all, it might have been me," he says.

The young red-haired girl of about twenty, Mabel Adams, makes parachutes. This is her afternoon off. Her reason for being here is very simple. One day she is going to marry a young man at present kept very busy with the Eighth Army. He wrote and told her that the Eighth Army needs blood. A couple of his pals had been blown up while clearing a minefield, and they'd told him all about the transfusions they had been given.

The elderly man with an A.R.P. badge prefers to keep his name to himself. You will notice when his turn comes to go behind the screen that he limps badly. He was seriously wounded in the last war. He lay for month after month slowly recovering, his wounds washed day after day with a constantly dripping antiseptic fluid. But he had nearly died from loss of blood before they could do anything for him at all. He tries to forget all this, especially when he thinks of his three sons, all in the fighting forces. It is a great consolation to him when he realises that if they get wounded, they need not suffer as he

Digitized by Google

suffered, thanks, among other things, to modern methods of blood transfusion.

Finally, Harry Robinson, the railwayman, knows what happens if a man gets crushed between two trucks on shunting operations—or smashed in an air raid. It might happen to him. Anyway, a pint of blood every now and then is the least one can give to the unlucky ones, he thinks, and a sort of insurance for the giver, too. "For all you know, they may be pumping it back into your own body one day."

Well, there they are, these six ordinary men and women, samples of the million and four hundred thousand men and women who have enrolled as blood donors from one end of Britain to the other. What is it they give? Why is their gift so precious? How is it used? Whose lives do they save? This book will answer these questions.

All over the country people like Mrs. Edwards, Corporal Evans, Mabel Adams, and Jim, with very little trouble to themselves, have given their pints of blood. In every one of the fighting forces at this moment, and in all the bombed towns and cities, there are men and women who owe their lives to these gifts. Not only that. In many a town in Britain men and women are walking about and doing vital war jobs who, though not war casualties, would quite certainly be dead but for the Blood Transfusion Services.

2 What is Blood?

TO Jim and Mabel and Corporal Evans and the rest, their blood is a bit of a mystery. They probably imagine it as a warm, red fluid like red ink, but thicker and darker. Blood is not in the least like that. Part of it, it is true, is a fluid, but the fluid is not red; it is almost transparent. In this transparent fluid, called plasma,[1] move millions

[1] "Plasma" and "serum" are both used for transfusion purposes, though for simplicity this book refers to "plasma" only. This is a technical description of the difference between them:—

Blood which is shed or withdrawn from the circulation, and left to itself, separates into a solid mass or clot, consisting of the cells entangled in "fibrin", and a liquid containing the blood proteins other than those concerned in fibrin formation. This liquid is *serum*.

Blood withdrawn into an anti-coagulant, such as sodium citrate, does not clot. The cells settle to the bottom of the container, leaving a clear fluid above them. This fluid contains all the blood proteins, including those concerned in fibrin formation, and is called *plasma*.

Digitized by Google

of solid bodies, passengers of one sort or another hurrying along the high roads called arteries and veins. Most of these passengers are red, or look red when we see a few millions of them together, and others are colourless or pale. Many of the passengers travelling along the blood highway are completely invisible, but we know of their existence because of what they do.

For tens of thousands of years men and women have had surprising ideas about blood. They have been terrified of it, they have worshipped it, they have thought it able to work all sorts of miracles. False ideas about blood have led men to perform the most atrocious cruelties, to believe in the strangest myths about their fellow creatures, to have many romantic illusions.

Men have killed one another in the belief that a sacrifice of human blood was needed to maintain the strength of the cruel idols they worshipped. Savages have sealed lifelong friendships by drinking one another's blood. Racial theories as evil as those believed in by the Nazis have attributed to the blood of individual men all sorts of good and bad qualities which it does not possess. (These theories have sometimes killed those who held them, as when German prisoners in this war have refused blood transfusions for fear that non-Aryan blood might be dripped into them to poison them.) Men have tried to increase their own courage and strength by drinking the blood of wounded heroes.

The fact that people have believed such things for countless generations does not make them true. There is, for instance, no truth whatever in the idea that one man's blood can change or influence another man's character. But when all the dreams and nightmares that mankind has had about blood have been recognised for what they are, the reality remains more remarkable than any fiction.

There Must be No Mistakes

The reality is this. Your blood, introduced into a sick or wounded man's veins, may be his one chance of life, but on the other hand may mean certain death for him. Your blood is one man's medicine and another man's poison. The careful use of your blood, if you give a pint of it this afternoon, can save someone's life. The careless or ignorant use of it might destroy a life. That is one of the many reasons why the story of blood transfusion is so fascinating. It is why the men and women responsible for the Transfusion Services have to be so skilful, so accurate, so conscientious in every detail of their work.

Now, what is blood ? First of all there is the fluid or plasma. Its chief function is to supply a means whereby the " passengers " floating in it can be sent in the course of their journeys into every nook and cranny of the body, to every tissue and cell. From before birth until

Digitized by Google

the moment of death the heart incessantly pumps this fluid round and round the arteries, little capillary blood vessels, and veins, to supply every cell in the body. The heart and the blood plasma are a transport system. The heart supplies the power, while the plasma is the vehicle in which the passengers are carried.

In case of serious injury, there will probably be a loss of passengers and a loss of plasma. The circulation will be upset and the passenger service disorganised. Sometimes, therefore, your blood is required to make up for the loss of someone else's blood plasma. It is probable, in fact, that a man whose life depends on a blood transfusion is dying through lack of plasma—that is, from the effects of shock—rather than through lack of the valuable passengers. His traffic system has broken down and the passengers are stranded and unable to get to their proper destinations. Now, what are these passengers ?

Millions of Passengers a Minute

Some of the most important from our point of view are the red blood corpuscles, tiny little discs, about five million to the cubic millimetre ; when seen alone under the microscope, these turn out to be yellow, but they give blood its characteristic red colour. These red blood cells, although they float in the bloodstream, are just as much part of the body as any other tissue. They are manufactured in the middle of those bones which contain red marrow, especially the bones of the backbone, the skull, the ribs, the pelvis, and the top ends of the long bones of the legs and arms. This red marrow develops into several different kinds of cell, of which the red cells are the most numerous.

Having been conveyed along the little capillaries of the bones into the circulatory system, they live there performing a very special work for from three to four weeks, and then they are worn out and their now useless remains are filtered out of the system, or salvaged to make new cells. The special duty which they perform to the body as a whole is that of carrying oxygen to every cell. Don't imagine that all your breathing is done by your lungs. When you take a deep breath of fresh air, you say you are filling your body with oxygen, but of course the act of breathing fills only the lungs. The oxygen must not stay in your lungs ; it must be distributed to every part of the body.

It filters through the delicate membrane, and each blood corpuscle passing that way takes up its quota of oxygen, and hurries along, propelled by the heart, through arteries into the tiny capillaries, sooner or later depositing the oxygen in one or other of the millions of cells from the crown of the head to the soles of the feet.

Having done this, the blood corpuscle picks up in exchange carbon dioxide, a product of the cells' mode of living, and finds its way back along the veins through the heart to the lungs once more. Here it gets

Digitized by Google

rid of its carbon dioxide, which you breathe out into the air again. Then with your next breath it once more gets its oxygen and repeats its journey. And so if a man, through accident or disease, loses a large proportion of his blood corpuscles, his tissues will very soon die of asphyxiation. The cells do not get their oxygen, and that is, in a way, the same to them as it is to a drowning man when his lungs cannot get oxygen because his head is below water.

Transfusion Restores the Transport System

Thus, there are two main ways in which blood transfusion can save life ; first, by supplying lost plasma, that is, the lost transport system carrying the blood corpuscles round the body ; secondly, by supplying the red blood cells themselves, when for some reason the body has not sufficient. This deficiency may come about because of serious hæmorrhage from a wound, or because something is wrong with the red bone marrow or other parts of the body which play a part in the making of blood cells, so that new blood cells are not being made as the old ones die.

Besides the red blood cells, there are many other passengers moving in the blood plasma. There are white cells, some of which destroy the germs of disease when they enter the bloodstream from the outside world. There are various kinds of nourishment, distilled by the digestive system from food and sent to nourish remote parts of the body. There are minute quantities of chemicals produced by the ductless glands.

There are other passengers, even more mysterious—so mysterious, in fact, that scientists prefer to call them by letters of the alphabet because they do not know what they are. What they do is well enough known now. By their presence or absence they divide human beings into four separate groups. Everybody's blood belongs to one of these four blood groups, and until tests have been made to find out to what groups a donor and a recipient belong, it is not safe to mix their blood.

There is only one of these four groups which can be safely mixed with blood not only of the same group, but also of the other three. For reasons we shall consider later, donors who have blood belonging to this group can give their blood to a recipient belonging to any of the four groups, but if their blood belongs to any of the other three groups, it would be deadly to the majority of human beings.

If you are a blood donor, you will know already that your blood has been grouped according to the presence or absence of these invisible passengers, and you will know that this grouping has been done in order to make quite certain that your blood is not given to the wrong wounded man.

Giving, grouping, using the gift—all require an organisation, and more than an organisation—a Service.

Digitized by Google

3 Transfusion: A Life-Saving Service

FOR a moment let us glance at the way in which the British Blood Transfusion Services have grown up. As might have been expected, they have grown up very much as other things grow up in Britain—by the hard work of individuals and without any ordered pattern imposed from above.

In some countries before the war there was a professional system of obtaining the necessary blood. Registered donors were paid so much a pint. The experience of Russia, and later of Spain during the Civil War, made people realise that Blood Transfusion Services should be on a national scale.

In 1921 the Camberwell Division of the County of London Branch of the British Red Cross Society began the transfusion service in Britain, when four of its members responded to a request for blood for an emergency case. The London Rover Scouts were one of the first groups to include blood donation as a form of service. Gradually, the need for a more widely-organised donor service became obvious. At the end of 1925, a Committee representing hospitals, the medical profession, the donors, and the British Red Cross Society was set up. Donor panels were organised in other large cities also. In 1938, seventeen years after its foundation, the London Service was able to answer over 6,000 calls for blood. Several of the donors had by then given blood on more than fifty occasions.

In 1936 civil war broke out in Spain, and a Catalan doctor in Barcelona, inspired by what had already been done in Russia, organised a blood store which served casualties in the Barcelona air raids and also on the field of battle.

By September 1938, most people realised that the experiences through which the people of Barcelona had passed might soon be repeated in London, and in the spring of 1939 the Medical Research Council, at the request of the Ministry of Health, prepared for the worst by setting up four blood supply depots at convenient points to cover London and the South-East. There were also local services in the provinces and in Wales, Scotland, and Northern Ireland, supported by local funds and voluntary subscriptions. At the same time a special Army Transfusion Service was set up in the south-western counties to collect blood for the armed forces in the event of war.

The expected air raids did not come when war began. But in the

Digitized by Google

days before Dunkirk and on the evacuation beaches we saw the first large-scale use of the Transfusion Services. In those days blood transfusions were almost always of whole blood, and material for transfusion remained useful for only two or three weeks, and then had to be scrapped and replaced by new supplies. But experiments with plasma were being carried out both here and in America, and its use revolutionised the whole problem.

How Blood is Collected and Where it Goes

After Dunkirk there was no part of Great Britain which could be regarded as immune from air attack or invasion. So the Ministry of Health set up Regional Blood Transfusion Centres in those parts of England and Wales not served by the Medical Research Council or the Army. In Scotland, the Scottish National Blood Transfusion Association had been formed under the auspices of the Department of Health for Scotland to co-ordinate and extend existing services. Besides these, there are the Royal Naval and Royal Air Force teams attached to certain of the civilian centres, which supplement for their own purposes the large quantities of blood and plasma supplied to them by the civilian Services. The Royal Navy has also its own Service to which only naval personnel give blood ; and Canada has sent substantial gifts of dried plasma.

All the different Transfusion Services have worked out their own organisation along lines which have seemed most suitable to local conditions and with the help of the British Red Cross Society, the Order of St. John of Jerusalem, St. Andrew's Ambulance Association, Women's Voluntary Services, Local Authorities, Trade Unions, Boy Scouts, Women's Institutes, Rotary Clubs, Church Societies, and many other bodies.

The different Transfusion Services do not appropriate the blood they have taken and use it solely for the benefit of their own special interests. Broadly speaking, they supply all the various needs, both civilian and military, within their areas. Nor are they content with this : they all supply blood products also to the fighting forces overseas.

Blood, fluid plasma and dried plasma are sent to Overseas Forces, to Home Forces, to prisoner-of-war camps, to Emergency Medical Service Hospitals dealing with Service casualties, air raid casualties and the sick, to the Royal Navy, the Royal Air Force and Allied Forces —anywhere and everywhere, in fact, where blood is able to save life.

Nearly three million gifts of blood have been made and distributed during the war. Figures, however, can give but a poor picture of the reality. We realise much more what blood transfusion means if we consider the individual cases of just a few of those who would have died without it.

Look for a moment at Squadron Leader Jim Duncan. Perhaps you

Digitized by Google

think that his scarred face is bad enough as it is. But you did not see him as he lay in hospital during the weeks following his crash-landing one foggy night in East Anglia. He had been wounded over Berlin, but in spite of his wound he had managed to bring his bomber limping back again. Knowing the hopeless condition the machine was in, he gave the order to his crew to bale out directly they reached the poppy fields of Norfolk. Then, almost fainting, he guided the bomber back towards his airfield, and crashed down through a hedge a few hundred yards away. The leaking engines caught fire, and Squadron Leader Duncan received that terrible new injury which only airmen are likely to know, that burn of hands and face which comes from the intense heat of high octane petrol, far worse than any ordinary burn which doctors have had to deal with before. Air Force Burn left Squadron Leader Duncan practically without a face. But, as so often happens—probably because the man instinctively screws up his eyes so as to protect his eyeballs—the most precious part of his face was not affected.

When a man is brought in suffering from Air Force Burn his only chance is immediate blood transfusion. Burns quickly affect the blood stream. There is no bleeding away of the whole blood as when an artery is severed, but the circulatory system becomes leaky and the blood plasma seeps away rapidly, some of it into the injured tissues, some of it to other parts of the body, because the blood vessels are no longer able to hold their precious contents. The result of this is delayed or secondary shock, collapse of the heart, and death some hours after the burn has been suffered.

The Plastic Surgeon's Ally

Squadron Leader Duncan lay on his hospital bed, wounded and burned, and mercifully unconscious. At the very moment he arrived at the hospital on a stretcher, a movable blood transfusion set was wheeled up to his side. The needle was pressed into the vein in his arm. The plasma began to drip. With the plasma dripping into him he was wheeled to the operating theatre, his wound cleaned and dressed, the fractured limb closed up in an immovable plaster case, the burned flesh cut away from his face and hands, always with the drip, drip of the transfusion set fighting his battle with death for him.

Meanwhile, his own plasma was leaking out and hour after hour more plasma had to be dripped into him to keep him alive. Slowly the gain of blood increased until he began to pull round. Then followed long weeks of healing. But the healing in itself could not give back to Squadron Leader Duncan anything which you and I would call a face. That was left until later.

At last the time came when he was strong enough to stand his second ordeal, the long-drawn-out operation of plastic surgery by means of

Digitized by Google

which, thanks to the almost incredible skill of the modern plastic surgeon, he was given new eyelids, new lips, new cheeks, new nose. Once more, in this second ordeal, blood transfusion contributed largely to success. This man, strong as he was normally, could hardly have borne as he did the modern sculptor in flesh re-modelling his lost features, had not blood been waiting in the store ready to see him through.

From beginning to end, Squadron Leader Duncan required the blood of thirty different donors, and though, as he walks about now, his face is terribly scarred, the result is a good deal better than what might have been, what would certainly have been in the last war.

No less are the ordeals of the soldier who fights on land. The wounds that are suffered by soldiers in this war are often very different from those in the last. A large proportion of them are more severe, which makes it all the more wonderful that a far greater number of men survive them—thanks to improved medical and surgical knowledge. When the final statistics of men wounded in this war and their deaths or recoveries come to be compared with those of the last, it will be found that an enormously greater proportion admitted to hospital now survive.

The four chief reasons for this are the use of penicillin, the sulphonamide and other drugs against infection in wounds, the use of the closed plaster treatment of compound fractures, blood transfusion, and the brilliant new ways of organising the medical services so that casualties can be got to treatment in the shortest possible time.

It is because of these four advances that so many men survive the worst type of wound a soldier can receive. This is the wound caused by an anti-personnel mine exploding under his feet. It is a shattering wound, crushing and pulping the flesh and bones, especially in the lower half of the body. There would have been no chance whatever of survival for such a casualty in the last war.

The Race Against Time

Sergeant Blake, a sapper, is an example of what happens to-day. This young man of 30 years had, as he put it, "the uncommon and startling experience" of watching his leg travelling many yards through the air. He was admitted to an Advanced Dressing Station, given morphia and a pint of plasma. Only four hours later they got him to the Main Dressing Station. He would, of course, never have got there but for the plasma. He was given two pints of blood and then operated on. During the operation, which was a long one, another three pints of blood had to be used.

Sergeant Blake is completely recovered. He has a steel limb now, and although he no longer superintends the finding of anti-personnel mines left behind them by retreating German armies, he is still a useful

Digitized by Google

man. Had he got wounds like this in the last war he could not possibly have lived, even if he had been lucky enough to find himself at a Main Dressing Station supplied with the normal amount of blood, for in the last war the normal amount of blood at a Main Dressing Station was never more than two pints. Besides this, it was the one pint of plasma he was given immediately after his wound, and before he was taken to the Main Dressing Station, that really saved him.

The Tenth Man's Chance

To give an idea of the extent to which blood transfusion has been used, here are some interesting figures from the desert campaign of the Eighth Army. During the battle of El Alamein, 7,393 casualties were admitted to the Main Dressing Stations. One in ten of these had to be transfused to save their lives, and on the average three bottles were required for each casualty transfused. At Agheila there were 1,393 wounded admitted. One in six had to be transfused.

Those are some of the figures for a few of the battles in the Middle East campaign. The figures for the British North African forces are almost exactly the same. Ten per cent. of the 16,000 wounded were transfused, and on the average three bottles were required for each casualty needing blood or plasma.

A very large proportion indeed of all these casualties needing transfusion was due to the explosion of anti-personnel mines. Here is an extract from a letter from a Field Transfusion Unit officer working with the British North African forces in April 1943 :

" During a recent series of 180 cases, operated on by two Field Surgical Units at a Main Dressing Station, I found that 42 were transfused before, during or after operation. I used 116 bottles of plasma, 11 bottles of fresh blood and 63 bottles of saline. These cases were mostly priority 1, and this accounts for the number and volume of transfusion. In this series only three died." The most telling comment that can be made on this is that in the last war, instead of three deaths, there might have been 42.

Most of this blood, but by no means all, comes from ordinary men and women in Great Britain. Obviously the average man and woman, more or less safely at home, would prefer that this should be so. But it should be remembered that soldiers in the field give their blood even in the midst of fighting.

Between 2nd March and 30th March, 1943, one Field Transfusion Unit operating in the forward zones of the desert received 1,776 bottles of blood from the troops in the field themselves, and still larger quantities come from the troops at the base. In all the Libyan battles, base troops in Cairo and elsewhere sent forward to the fighting zone 10,379 bottles of blood.

Digitized by Google

4 Blood Relations: The Story of the Blood Group

WHEN Jim and Mabel and the rest walked up the bomb-damaged steps to the Parish Room they had, you will remember, cards in their hands. An important entry on each card was a statement that the donor belonged to a certain blood group. It was with the discovery that people belonged to different groups that successful blood transfusion began to be possible.

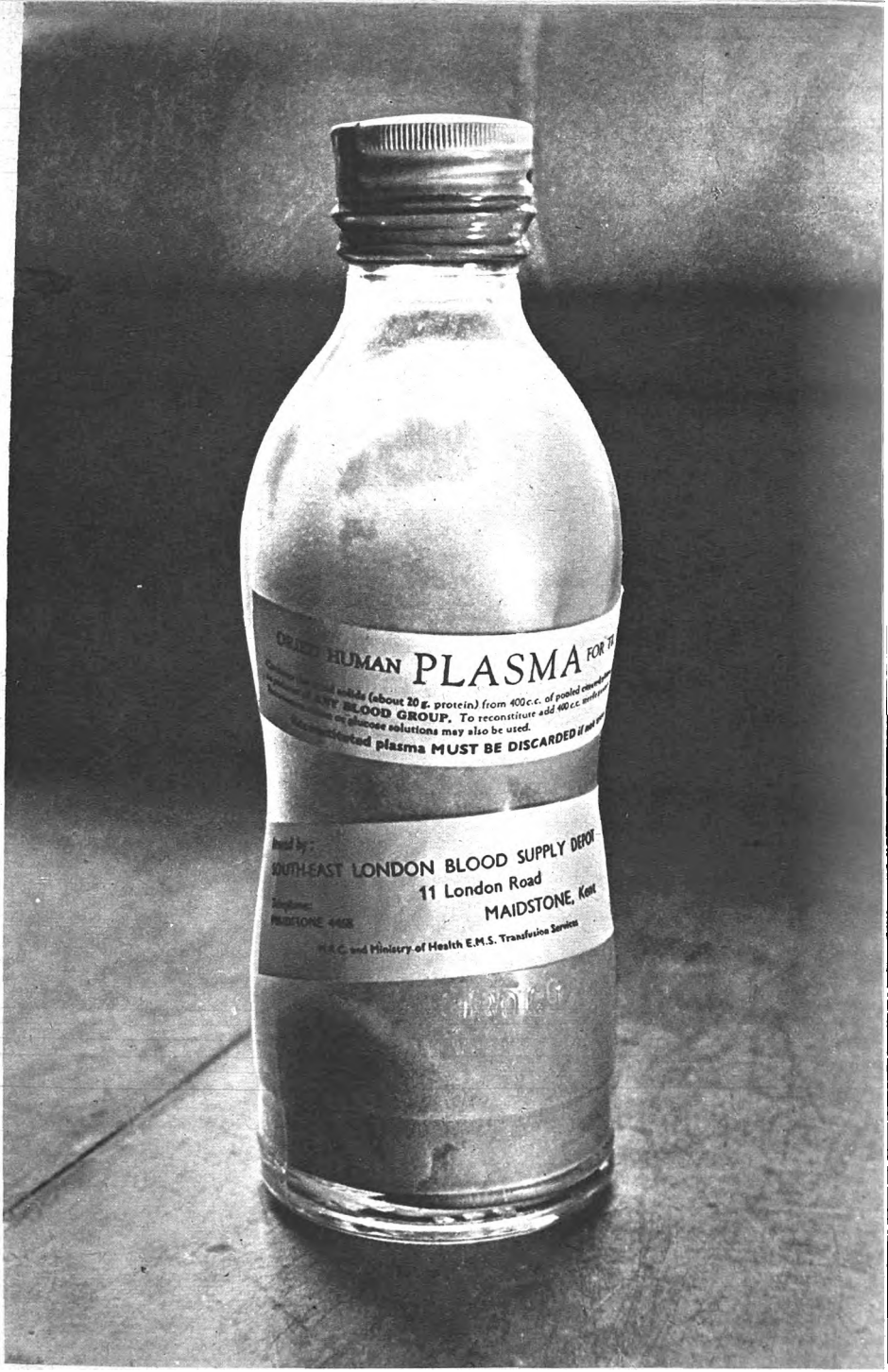
Hundreds of years ago transfusion was tried, sometimes with animal blood, sometimes with the blood of a relative moved by love of a dying man or woman. Nearly always these blood transfusions were not only unsuccessful, but acted as if deadly poison had been poured into the victim's system. In 1900 Professor Landsteiner discovered the reason.

The red blood corpuscle is, as we have seen, a little circular disc. It is three-thousandths of an inch across, and only a quarter of this in thickness. Even then it would not be small enough to pass through the smallest capillary blood vessels if it could not bend and change its shape. Now this minute and fragile thing is really a bottle filled with a special chemical compound called hæmoglobin. It seems that Nature has invented hæmoglobin for the special purpose of picking up minute quantities of oxygen breathed into the lungs, and dropping them again in the cells of the body. If there were no hæmoglobin in the blood it would require 300 gallons of blood to carry one gallon of oxygen, and this would mean, amongst other things, that we would require a heart almost bigger than our human bodies to pump the oxygen round to all the tissues quickly enough to supply them with the minimum amount required. But thanks to the way in which hæmoglobin can take up and set down oxygen, seven gallons of blood can carry one gallon of oxygen.

That is the task of the red corpuscles. There are about 25,000,000,000,000 of them in the average human being, and the heart and plasma transport system pump them round quickly enough to supply as much as a gallon of oxygen a minute to a man taking physical exercise.

If you take a drop of blood and mix it with several times its volume of a suitable fluid and look at it under the microscope, you will see the blood corpuscles floating about, evenly spaced, and keeping a reasonable distance from one another. If to these diluted red blood

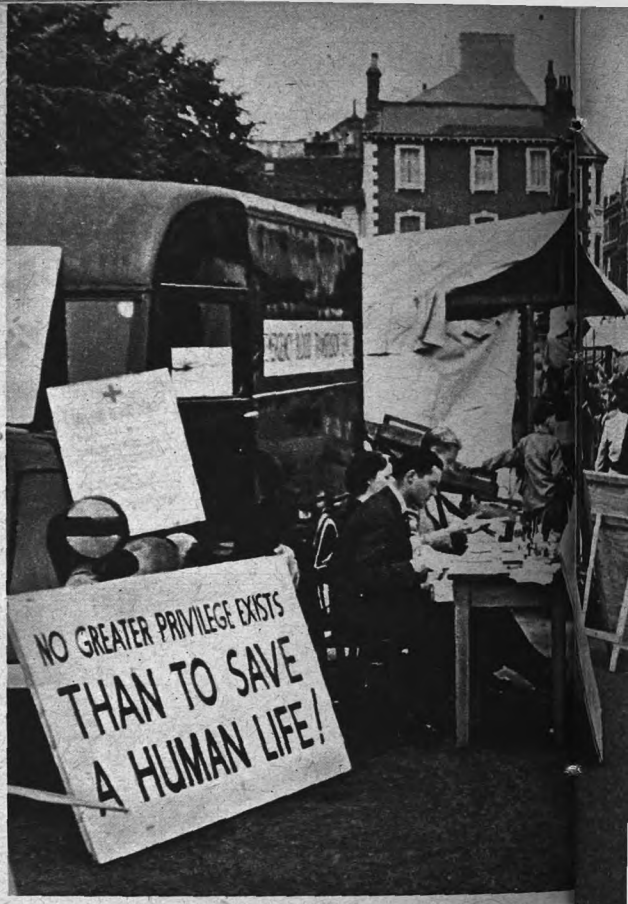
Digitized by Google



The life-saver. **In the form of dried plasma, the blood donor's gift is preserved so that it can be used months later on distant battlefields.**

Digitized by Google

Call for volunteers. People like these, in cities and villages all over Britain, give their blood to make the life-saving plasma.



Making the gift. At a local centre a pint of blood is taken in a few minutes.



Digitized by Google



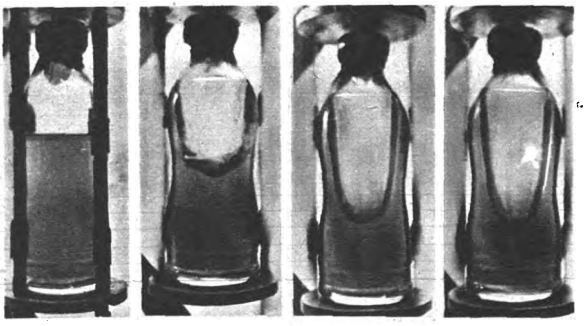
After giving blood. A short rest, a cup of tea, and a donor can be back at work.

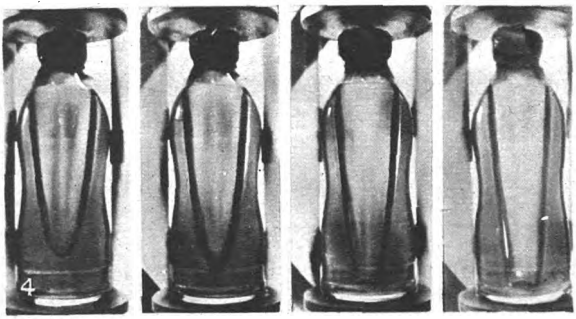


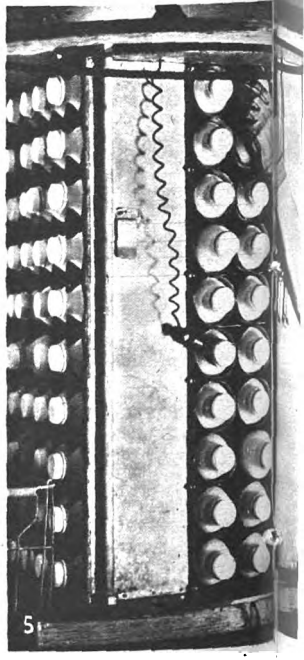




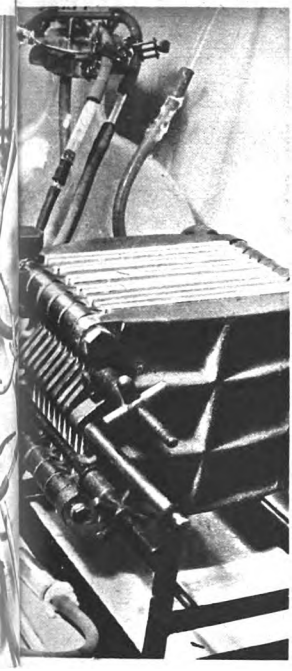
The blood you give goes through many processes (see pp. 25-30). **1.** Plasma has been siphoned into bottles containing kaolin, which prevents it clotting. **2.** At the drying centre it is filtered, to remove impurities, **3** measured off into sterilised bottles, **4** and rotated in a spin-freezing machine. (The top left-

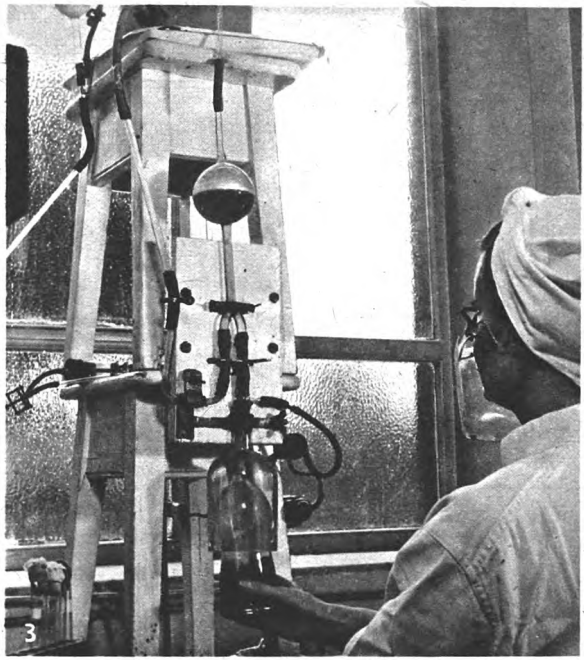






Digitized by Google





hand bottle has not yet begun to spin and the liquid is at normal level ; the bottom right-hand bottle, spinning at full speed, is throwing the liquid up against its sides.) **5.** The plasma, now frozen, is put into a vacuum drying chamber. **6.** The finished product is distributed to Transfusion Centres.





Digitized by Google





Blood group. Service men and women, as well as civilians, give their blood. (*Above*) Sailors have samples taken for "grouping." It is on correct grouping that successful transfusion of whole blood depends. (*Below*) Samples of blood being classified in an Army laboratory.



The one chance of life for many a man wounded in battle is an immediate blood transfusion. In a forward medical post on the Anzio beachhead, a casualty is given a morphia injection before the transfusion.

Digitized by Google



Out of the shadow. The last drop of plasma has dripped into the wounded man's arm, restoring life and strength, so that he can safely be moved to hospital for further treatment.

Digitized by Google



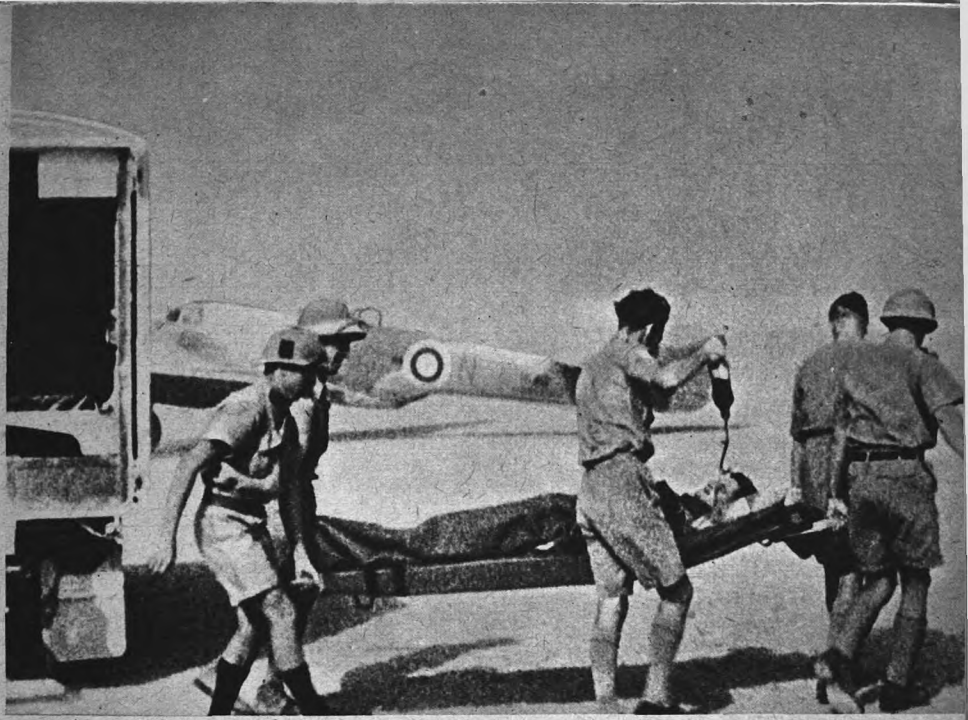
Digitized by Google





Non-stop transfusion. A wounded airman is being hurried to an R.A.F. hospital. All the time—in the ambulance, on the landing ground, as he

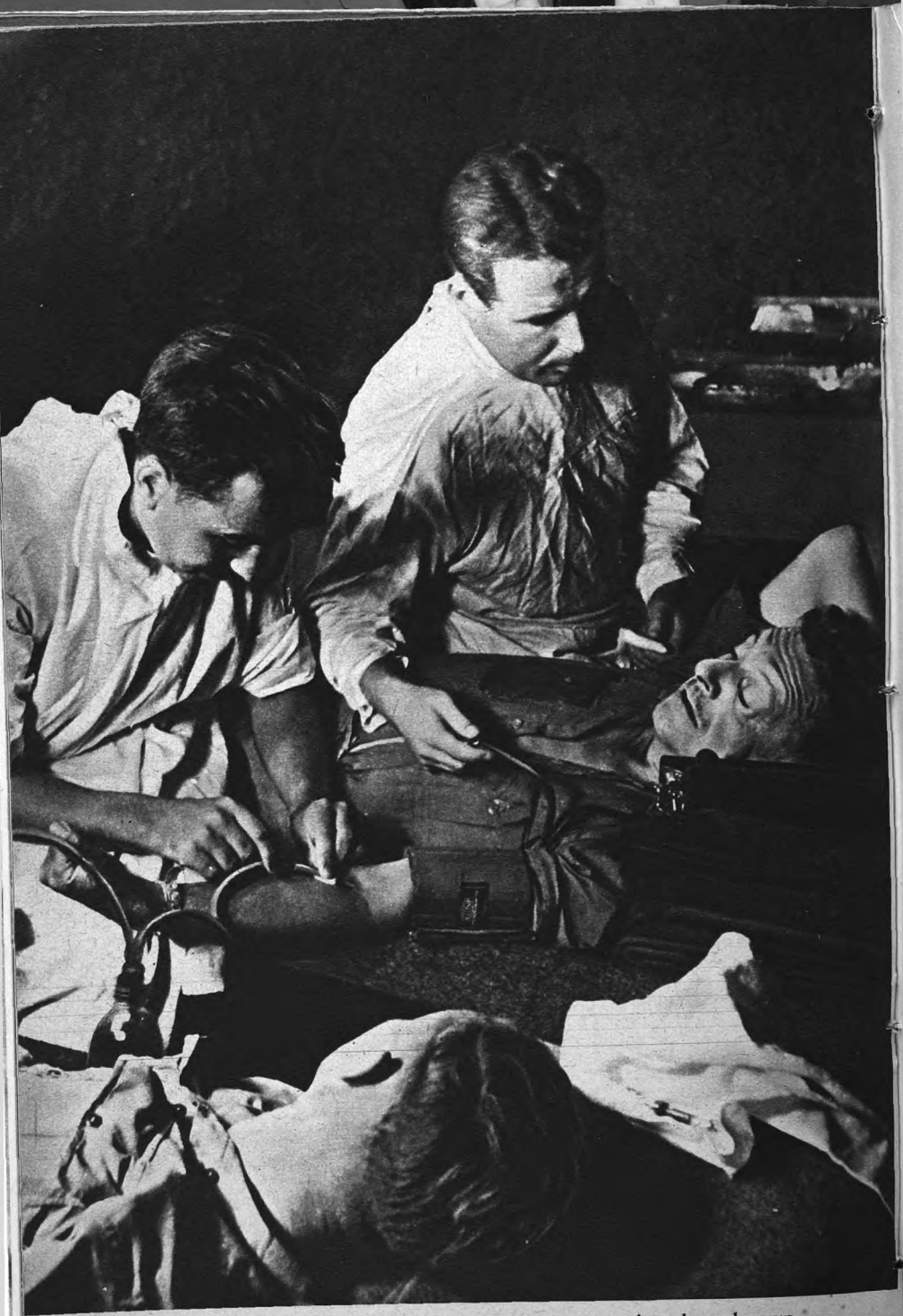
Digitized by Google





is being lifted into the Red Cross aircraft—transfusion continues, and a spare bottle of plasma, for use on the journey, follows him into the plane.

Digitized by Google



Blood brothers. Although stored blood and plasma—given by unknown donors, perhaps thousands of miles away—is now normally used for transfusions, in an emergency the old method of direct transfusion from one man's veins to another's is sometimes necessary.

Digitized by Google

corpuscles you add a small drop of the plasma or serum from some other human being, one of two things will happen ; either the red blood corpuscles will go on floating around exactly as before, or quite soon you will notice them clumping together in lumps—agglutinating, as it is called. When this clumping of the blood corpuscles has gone on for some time, the little bottles crush against one another so tight that they burst, the broken skins sink to the bottom of the fluid, and all the rest of the fluid becomes dyed pink, like red ink, with the hæmoglobin that has poured out of the broken bottles. This bursting of the blood cells and emptying of their contents is called hæmolysis, or blood death. It means that the value of the blood cells has been destroyed.

The reason for the *grouping* of blood donors is that we must know beforehand whether this clumping will happen when the blood of two persons is mixed together, for if clumping occurs the blood transfusion will be useless and the blood recipient will probably die. What Professor Landsteiner found was that in the red cells of most people's blood there are two passengers known only by what they do. He called these two passengers A and B. You may have in your blood cells both A and B, or only A or only B, or neither of them.

In the same way, in the fluid portion or plasma of your blood, there may be one or other or both of two passengers called anti-A and anti-B. A and anti-A cannot get on together, nor can B and anti-B ; directly they are found in the same blood stream trouble begins.

This is what is meant by saying that your blood belongs to one group or another. The following table shows how blood is grouped according to the passengers contained in the red cells and the plasma. In the first column is the name of the group, in the second column we have the passengers in the red cells, and in the third column the passengers in the plasma.

Group	*Red Cells*	*Plasma*
A	A	anti-B
B	B	anti-A
AB	A & B	Neither
O	Neither	anti-A and anti-B

You will see from this table that if you have A in your red cells you will have anti-B but not anti-A in your plasma ; if your red cells contain B, your plasma will contain anti-A, but not anti-B ; if you have both A and B in your red cells, then you will have neither anti-A nor anti-B in your plasma. If you have neither A nor B in your red cells, you will have both anti-A and anti-B in your plasma.

Whatever A and B, anti-A and anti-B are, one thing is quite certain, that there is something about anti-A which destroys any red cells

Digitized by Google

containing A. As we have said, A and anti-A and B and anti-B cannot exist together in the same blood stream.

Suppose you belong to Group B and you give your blood to save the life of a wounded man. And suppose the wounded man belongs to Group A. When your blood is mixed, the anti-B in *his* plasma will kill your blood cells and no good will come of the transfusion. If you were able to see under the microscope some of your blood after it had passed into his veins you would see the blood cells clumping together in heaps.

If, on the other hand, your blood belongs to Group O, that is to say, has neither A nor B passengers in the cells, it does not matter so much to what group the wounded man belongs ; whatever anti-A or anti-B there may be in his plasma will not be able to destroy your blood cells, because they contain no A or B.

Probably you will be wanting to ask a question at this point. Why, you are wondering, will not the anti-A and anti-B contained in the plasma of anyone belonging to the O group not destroy the recipient's blood cells if they have got either A or B in them ? The answer is, that although a certain amount of damage may be done, the donor's plasma will be dripped little by little into the recipient's blood stream, and so will be too diluted to do any serious or immediate damage.

That is why people belonging to Group O are sometimes called universal donors ; because their blood can, with more or less safety, be used to transfuse anybody, whatever the group to which he belongs. In an emergency, blood of this group can be used without testing to find the blood group of the wounded man.

However, this is only safe to a certain degree, because although the blood cells of a Group O " universal donor " will not be killed, the anti-A or anti-B in its plasma might kill a dangerous number of the recipient's cells if they contained A or B.

In a few cases, indeed, this does happen because in some individuals of the O Group the plasma is particularly strong in anti-A or anti-B, and then serious damage may result. For this reason, although people in Group O are called universal donors, and although their blood can, in case of necessity, be used for any patient, doctors prefer, whenever there is time, to make a direct matching of the blood of the donor and of the recipient in every case. That is to say, they take a drop of plasma from each blood and mix it with the red cells of the other blood. If the patient's plasma does not agglutinate the donor's red cells, nor the donor's plasma the patient's red cells, the two bloods are compatible.

It has, of course, taken much time and practice before doctors could know exactly the best way of transfusing blood to avoid all the dangers, and one of the blessings of the Blood Transfusion Services which will

Digitized by Google

last long after this war is over is that they have given doctors the opportunity to learn in a short time what might otherwise have taken a generation.

So much for the meaning of blood groups. It is most important to realise that the existence of these groups does not mean that anybody's blood is better or worse than anyone else's, except for the one purpose of mixing with the blood of a given recipient.

Blood as Individual as a Finger-print ?

When Professor Landsteiner first discovered the existence of groups, and therefore the reason why blood of incompatible groups must not be mixed, he thought there were just three such groups ; the fourth, the AB group, which is much rarer, was added to these three later.

As so often happens, further research has made the problem very much more complicated, because it is now known that there are sub-groups—that is to say, each of the four chief groups can be divided into more than one group. Indeed, it looks as if some day we shall find that almost every individual has blood which is different from the blood of any other individual on the face of the globe, and that we shall be able to identify an individual from a drop of his blood in the same way as we can from a finger-print.

In 1940, it was discovered by Landsteiner and Wiener that the blood of certain people contains a passenger known as the Rh factor. Such persons are known as Rh positive, whilst the minority of people who lack this factor are known as Rh negative. When an Rh negative woman has a baby by an Rh positive father, the child is liable to develop a form of anæmia which may be fatal. Transfusion with Rh negative blood is required to save the life of the baby and, should the mother need a transfusion, it is essential that only Rh negative blood be used. Special banks of Rh negative blood are now kept for this purpose.

There is one other thing which has to be carefully checked when a donor's blood is tested and grouped. It is, as we have seen, nonsense to imagine that such things as character, strength and mental attitude can be affected by a blood transfusion, but there are a small number of diseases which could be transmitted from donor to recipient if the greatest care were not taken to prevent it.

The most important disease that could thus be transmitted is syphilis, and all necessary tests are made on donors' blood to guard against this. There is, in fact, only a very small number of such hidden infections. Any information of this sort is kept absolutely secret, and used only for the safety of the persons directly concerned.

There are one or two other diseases that have to be watched for, including malaria, measles and influenza : that is why questions about the recent health of the donor are always asked before blood is taken.

Digitized by Google

5 How Blood is Given

NOW that we know what blood is, why it is needed, how it is used and what is meant by a blood group, let us follow the gift of blood from the moment when it is taken to the moment when it is used to save life.

We left Jim and Mabel, Corporal Evans and Mrs. Alice Edwards waiting their turn to go behind the low screen where four beds were ready for them. The Blood Transfusion Services do not, of course, consist only of givers and receivers. At every stage well-trained, conscientious men and women have to carry out difficult work in a way which will make mistakes impossible. Carelessness at any stage of the process would cost the lives we are trying to save. Everything is rehearsed again and again—that is why no accidents occur during the process of taking blood from the donor. No time must be wasted, and the trained team of workers have practised together until they know exactly how to bleed the largest number of donors in the quickest and safest way.

Of course, the arrangements differ from place to place and from time to time, but here are the details of the team waiting on this Thursday afternoon for those who have come to give their blood. It consists of eight people—one Medical Officer, four nurses, one orderly and two drivers. In this team the Medical Officer is a man ; frequently, like other members of the team, the Medical Officer is a woman.

Now the drivers are not just drivers. They do not sit in their cars waiting for things to be done inside, until they can drive off again. One of them acts as receptionist. She has already asked Jim and Mrs. Edwards and the rest if they have been ill lately. She has checked their cards to see that no mistake has been made in name, address and other particulars. Just before their turn comes she has seen that they have their arms bared to well above the elbow, and now she takes them to their beds.

The other driver is looking after the donors who have already been bled. She sees that they rest for 15 minutes, and gives them a cup of tea. After that, the Medical Officer inspects each arm while this driver stands ready with a small strip of elastic dressing to put over the prick-mark and, very often, a packet of iron tablets to be taken by each donor during the next week.

The donors lie down. Their arms are cleaned with antiseptic. The Medical Officer gives each a local anæsthetic (Jim says he doesn't

Digitized by Google

want this, as he doesn't mind the prick of a needle). The needle is carefully pushed into a vein—a skilled job, since the vein may be quite invisible, and the point of the needle must rest precisely within its slender walls, or the vein will be buttonholed or pierced and no blood will enter the bottle.

It is worth while looking at that needle. It was made in a British factory, though before the war we were dependent upon the Germans for most needles. The process of the needle's manufacture is remarkable. It began by being a piece of steel tubing. The steel tubing was drawn out longer and longer, becoming smaller and smaller in diameter in the process. By the time the tubing had become small enough in diameter it was long enough to be divided into hundreds of thousands of needles. The whole process, carried through without the application of heat—the cold-drawn process, as it is called—is so skilfully done that only one needle in a million breaks. Next the needle has to be sharpened by a highly skilled technician. In one Transfusion Centre, eight men and women spend the whole of their working time sharpening needles.

The Blood Must Not Clot

Before describing what takes place when the needle is inserted in the donor's arm, it is necessary to explain that successful transfusion on a large scale became possible only after the discovery that chemicals could prevent clotting of blood. All healthy blood clots. We all know this from experience. If we prick a finger or cut ourselves when shaving, it will not be long before the drops of blood oozing out cease to run and become sticky and almost tough. It is Nature's way of closing a wound. Until this discovery was made transfusions were usually *direct* transfusions from the donor to the patient. The donor lay side by side with the patient, and the blood was dripped through a tube. There was no interval during which the blood could clot. Storage of blood—and consequently its large-scale use—became practicable only when anti-coagulant chemicals came into use.

Note what happens now when blood is taken from a donor. The needle goes into the vein of the arm. The other end of the needle has been attached to rubber tubing, which leads into a glass bottle. In the bottle is the chemical which prevents clotting. Once the needle is in the vein the blood will flow slowly and steadily into the bottle, which must be kept shaking all the time to produce a uniform mixture with the chemical. Sometimes the nurse shakes the bottle herself. Sometimes an automatic shaker (looking rather like a gramophone turntable) is put on the floor by the bed and conveniently does the job for the nurse.

At one centre in Scotland another method of mixing the blood with the anti-clot chemical is adopted. The bottle of chemical is hung high

Digitized by Google

up, and drips by gravity into the tube along which the blood is flowing from the donor's vein ; thus blood and chemical are kept mixing all the time.

When about a pint of blood has flowed out of the vein, the needle is removed. A pad is put on to the arm over the punctured vein and the donor walks across the room to a couch and rests.

If you have given your blood and watched others giving theirs, you will know that very few donors suffer any uncomfortable feeling. Medical men will assure you that there is nothing in the least heroic about giving blood. Yet for ordinary men and women, it *does* require courage to give blood for the first time. They do not know just what to expect : they go prepared to suffer some pain or discomfort because they know that their gift may save a life.

In fact, the number of people who feel faint after giving their pint of blood is less than one in twenty. Indeed, more people feel the better for their bleeding than feel faint for a minute or two at the time. If for some reason the nurses feel that the donor is suffering inconvenience, the flow of blood is stopped at once and the donor waits until another day before completing his gift. Great care is always taken to rest donors before they leave. They lie on a couch for fifteen minutes or so, drink a cup of tea and eat a biscuit, and then they are ready to return to their work. In every case the donor's red bone marrow and the other blood-making organs of his body make up the loss within a very short time.

When the last donor has been bled, the collecting unit packs up its equipment and takes the blood off to the depot to undergo necessary treatment. As far as Jim and Mabel and the rest are concerned the whole thing is over. But what happens now to the blood they have given ? Let us take a look at what goes on behind the scenes.

6 The Secret of Plasma

NEITHER the donors nor the recipients see the complicated processes and all the careful work that make the vital blood gift possible.

To begin with, cleanliness is absolutely essential. In one centre alone there are 3,500 bottles, 4,000 pieces of rubber tubing and 6,000 pieces of glass tubing to be washed every day, and 2,000 needles to be sharpened every day. Then think of the care that must go to packing

Digitized by Google

and transportation. The main Drying Centre alone receives every week the equivalent of 2,500 bottles of plasma from the London and Regional Depots and the Navy, and sends out weekly a similar quantity of the dried products to the Services and to civilian centres.

The Gift is Treated with Skill

Most amazing of all, perhaps, is the combination of scientific discovery, efficient organisation and trained service that makes possible the conversion of blood into forms that will preserve its value far away from where it was given, and long afterwards.

The blood collected on that Thursday afternoon was put into a refrigerator and brought down to a temperature of about 2° C. within an hour. It must not be allowed to freeze because that would destroy the blood cells, but it has to be brought to the lowest possible temperature short of freezing to delay, so far as is possible, the decomposition which begins in blood from the moment it is shed.

Thus, the whole blood, cells and all, is kept in a Blood Bank ready for emergency. It will not be kept for more than twenty-one days at most. That is regarded as the extreme limit, after which the blood cells are not suitable to use. But only the *cells*. The fluid they float in, the plasma, is still useful. In fact, one of the things the war has taught us is that plasma, after the cells have been removed, is by far the most practical blood substitute. For plasma does not spoil as quickly as whole blood and —we shall see how this is done—can even be made to keep indefinitely. So, under battle conditions, far from the home base, most blood transfusion is plasma transfusion and not whole-blood transfusion.

That, by the way, is the answer to a question blood donors very often ask. "Why," they say, "can't we know the actual soldier or sailor to whom our blood gift goes?" If the donor's whole blood were used for a transfusion, it would be possible for the donor and the recipient to know one another. In Russia the bottles of whole blood are all marked with the donor's name, and the recipient, if he wants to, can be told whose blood has been given him, and can meet and thank the person who helped to save his life. But when blood transfusion takes the form of transfusing the plasma alone, this is not possible, for the plasma of many donors has to be pooled.

This has to be done to make quite sure that the occasional specimen of plasma very strong in anti-A and anti-B passengers, which by itself might be dangerous, is rendered harmless.

It takes about two-and-a-quarter pints of blood to produce one pint of plasma, so that for every wounded man who has received a pint of plasma the gifts of three people have to be used. This plasma which he receives can be in two forms. It can be either liquid plasma

Digitized by Google

—what is left of the blood-gift when the red cells are removed—or it can be liquid plasma which has been dried, then "reconstituted" with distilled water, when it is needed, just like dried egg or milk.

Plasma Made to Keep For Ever

Dried plasma will, as far as we know, keep for ever, but it must be dried in a special way if its delicate life-saving powers are to be preserved. Scientists have learnt how to do this only since the beginning of this war. Plasma contains a number of highly complicated substances called proteins, the basis of all living matter. It is by the constant changing of these proteins, their building up and breaking down, that the body exists. In plasma taken from the living body, the breaking down goes on without any building up to make good the loss. If plasma is to be kept, these changes, and all other ways of decay, must be arrested. They take place in the presence of warmth, and moisture even in minute amounts. Freezing the liquid plasma prevents the changes which are bound to go on as long as moisture is still present. Drying it, extracting every particle of moisture from it, stops the changes altogether. But this drying must be done without heat—later we shall see how.

Suppose, then, the blood gift is to be turned into dried plasma for transport and use months, even years hence, perhaps in some far country. This is what happens to it.

First, having been brought from wherever it was given—the Parish Room that Thursday afternoon, for example—to the Regional Depot, it is stood in a cold room and the blood cells are allowed to settle to the bottom, which they do because they are heavier than the plasma in which they are bathed. Soon the contents of the bottle separate into two layers; a dull red layer of cells at the bottom and a cloudy yellowish layer of plasma at the top. Next the plasma is siphoned out into large bottles containing a substance called kaolin, which removes the clotting factor and thus allows the plasma to be filtered easily. Into these large bottles goes the plasma from several blood-gifts.

Vigilance at Every Stage

Now that the blood cells have been removed, the plasma can be brought right down to freezing point, the best temperature for preserving its proteins. In this frozen state it leaves the Regional Depot and is taken to one of the drying centres.

At the drying centre it is thawed out and a sample taken and examined to see if it contains any bacteria. So careful is the treatment given at the Regional Depots and throughout the process that only very occasionally is trouble discovered. Here and there a bottle top gets unstuck or an unaccountable cloud or speck appears, but only a small amount of the total blood-gift has to be discarded as useless and

Digitized by Google

dangerous. When you think how hard it is to keep anything perfectly sterile, you realise that this result is possible because all the workers in the Blood Transfusion Services, down to the least bottle washer, feel that the material with which they are dealing is precious. A moment's carelessness in cleaning a rubber tube might mean the waste of several donors' life blood. A single speck of dust may be disastrous. Thanks to this sense of responsibility which is shown at all stages, accidents are very rare.

When the sterility, the perfect cleanliness, has been proved, there is a final filtration through asbestos pads. Then the plasma is poured into smaller bottles, in a carefully measured amount, by women working in a sterile room and wearing masks to prevent their breath from spreading germs. These bottles have just come out of an autoclave, a large container into which high-pressure steam is passed to sterilise every bottle inside and out.

The two women who received the bottles containing Mabel's and Jim's and Mrs. Edwards's contribution were in civilian life a milliner and a ballet dancer. Now they have been trained to prepare this precious fluid in a way which will make certain that not one speck of dirt can pass their scrutiny and bring not life but death to some wounded man or woman.

When each bottle has been filled with an exact amount of plasma it is closed with a filter cap of gauze and cotton wool which lets air pass in and out. Water vapour can pass through also, but no dust or bacteria can pass in. The reason for this will be seen in a moment.

The bottles are now taken into a large refrigeration room and placed in a machine which spins them round and round. This flings the plasma up against the side of the bottles, leaving a hole in the middle, just like the hole in the water when the bath is running out. In this position it freezes, thus exposing a larger surface from which the drying can take place. This spin-freezing, as it is called, speeds up the process of drying once it begins.

The hole in the middle is biggest at the top and if exactly the right amount of plasma has been poured in there will be a hole at the bottom of the bottle rather smaller than a threepenny bit. If you do not see this hole you know that too much plasma was put in by mistake and that will mean too long a time taken in drying; so the bottle which shows plasma at the bottom without a round empty space must be re-processed.

Drying Without Destruction: The Scientist's Problem

The moment has now come for the drying—by far the most interesting part of the process, but one which it is rather hard to understand. It is a most difficult process. It cannot be done by just boiling or heating the plasma in the ordinary way, for that would destroy it.

Digitized by Google

It would have somewhat the same effect on the plasma as boiling has on the white of an egg.

Think of a saucepan of water on a hot fire. That water is made up of tiny pieces called molecules and every molecule in the water (and in everything else for that matter) is in a state of continuous movement. No molecule gets very far, however, since it is for ever knocking against the neighbouring molecules. The hotter a thing becomes the more the molecules move, until eventually the top surface of molecules in the water move so violently that they escape into the air above. That is what is meant by boiling. Water boils when its molecules escape in the form of steam into the air above. Now the air also consists of molecules in motion, and quite a large number of the water molecules hit against the air molecules and bounce back again into the water. The more air molecules there are, the higher the temperature has to be raised before the water will boil. By removing nearly all the air molecules the water can be made to " boil " at such a low temperature that it remains frozen throughout the whole process.

That is the secret of drying plasma. In ordinary air at normal atmospheric pressure the heat required for boiling would destroy the plasma before it dried it. Therefore the drying is carried out in a high vacuum so complete that the plasma remains frozen throughout. At this temperature the delicate proteins of which plasma is composed are not damaged, so that they will continue to serve their vital functions when water is added to the dried product, maybe years later.

The bottles are placed in containers, the containers sealed up, and the air is pumped out of the containers and so out of the bottles inside. Each bottle fits into a round tin which can be heated by electricity. At the bottom of the containers are refrigerator coils made cold exactly as they are in an ordinary domestic refrigerator. The heat makes the water molecules in the frozen plasma dance violently until they dance right through the bottle cap and, having no air molecules to oppose them, they fly to the cold coils and there turn to ice.

The Last Drop of Moisture Goes

Thus, bit by bit, the moisture is expelled from the plasma until there is so little left that without careful tests you would think that the plasma was absolutely dry. This is not so, however. Even after it has been in the vacuum containers for three days there is still a two-thousand-five-hundredth part of the original water left. That is hardly enough to notice, but quite enough to spoil the plasma ; quite enough to allow some of the proteins to carry on their natural changes. This last little remainder of dampness must be eliminated by a second drying.

First, fresh caps are put on to the bottles. These consist of rubber

Digitized by Google

covers screwed into position by metal rings. A hypodermic needle is inserted into each cover. Then the bottles are placed in another container, at the bottom of which are saucers of a white powder—phosphorus pentoxide—a chemical which absorbs any moisture brought near it. Again the air is pumped out of the sealed containers and the bottles inside, and the phosphorus pentoxide sucks out the last trace of moisture in the plasma through the hypodermic needles. After two days, the plasma is totally dry. Then, pure dry nitrogen is introduced into the containers and passes into the bottles. (Dry nitrogen is used and not dry air because nitrogen has no injurious effect on the plasma, whereas the oxygen in air might turn the fats in the plasma rancid.) The bottles are taken out of the containers and the needles quickly withdrawn from the caps—the tiny punctures they have made in the rubber covers close themselves before air has a chance to get in. The cap is finally sealed. The dried plasma—it looks like a mass of yellowish white crystals—is now safely preserved.

If you were to visit a great drying centre you would see a room full of closed cylinders, you would hear a low hum of a motor, you would notice a control panel with warning lights ready to flash on if any of the hidden processes should go wrong. That is all you would see; but screened from your eyes there is the blood-gift of over 7,000 donors being turned from a highly perishable substance into a lasting saver of lives.

7 The Gift Works Miracles

WHEN the first wave of troops landed in Normandy, the gifts of 10,000 donors went with them. Before that, in Italy, Sicily, North Africa, Greece, Crete and Burma, blood gifts saved many men. Blood from Britain was dropped by parachute over Malta in the direst days of the siege. At almost every hour of the day and night, all over the world, on the battlefield, on the sea, on airfields, in the bombed cities of Britain, in civilian hospitals and maternity wards, the blood gift has saved the lives of men, women and children for whom a few years ago there would not have been the slightest hope. . . .

* * *

It is 3 a.m. on a winter night. There has been silence for half an hour. Before then for perhaps forty minutes the familiar roar of

Digitized by Google

returning bombers has filled the East Anglian air. We all know that sound nowadays—a rather tired sound compared with the full-throated eager roar of those bombers a few hours earlier as they passed over on their outward journey. Civilians turning over in bed hope that as many are coming back as went.

The last one has reached its airfield. No, not the last one, for once more the silence is broken. A limping sound. A great Halifax hobbling home, its fuselage riddled, its crew exhausted and some of them dead.

The Halifax touched ground at last on a field in Norfolk. Not a perfect landing by any means ; and no wonder ! The rear-gunner is dead. The navigator is dead. The pilot with one arm shot away and a wound torn in his side has pancaked down in a dream, a weary dream, for he has no strength left except in his indomitable will.

They rush him to the nearest medical post. The surgeon looks at him ; " pretty nearly bloodless " he mutters. A few years ago death would have been certain. Now they fit up a blood transfusion set and drip the plasma into his body. Soon the pilot opens his eyes. Within a few months he is ready to work again. . . .

In a stretch of the cold grey North Atlantic puffs of smoke are rising from funnels. Through the waves comes the sea-wolf's claw, a U-boat torpedo rending, with surprisingly little noise, a surprisingly large hole in a tanker's side. Fire sweeps through the ship and the crew bundle into the boats. Through the hole in the ship's side pour hundreds of tons of petrol which bursts into flames as it spreads over the surface of the water. The men, straining at the oars, are seared and scorched by the flames.

A cutter races up from one of the other ships in the convoy. The men are helped aboard, and presently blood plasma is dripping into their veins, staving off shock, making possible the long weeks of skilful nursing which will lead to recovery. Plastic surgeons mould a new face here, skin is grafted on this limb ; and a few months later these men of the Merchant Navy are out on the Atlantic once more bringing in the food and weapons of war. . . .

It is ten o'clock on a summer night in London. The roar of a flying bomb stops: and the bomb falls on a row of small houses filled with people getting ready to go to shelter. Within a few minutes the ambulances begin to arrive at the hospital. In the Reception Room a doctor quickly sorts out the casualties. Those with severe shock he sends to the Resuscitation Ward, where the beds have oxgyen laid on and are fitted with electric cradles. Soon almost every bed has a

Digitized by Google

bottle of whole blood or plasma hanging above it. Under the piles of blankets, as the blood drips into their veins, the patients begin to revive.

* * *

In wartime, our main duty lies with the casualties in the front line. But there are many other people who owe their lives to blood transfusion, mothers who could not have given birth to children, children who would not have seen the light of day, munition workers, miners, useful citizens in all walks of life.

If Jim and Mabel and Mrs. Edwards and the A.R.P. man with the limp and Corporal Evans and Harry the railwayman could have been present when a small group of ten men and women gathered together one Tuesday morning in a hospital board room, they would have seen the fruits of their small, personal sacrifice.

It was a dark, old-fashioned, gloomy room, with whiskered and bearded Victorians, the fierce-looking philanthropists of their day, frowning down from their gilded frames at a mahogany table and a worn carpet. The ten men and women had come to describe what had happened to them. Each of them would have been dead were it not for the prompt help afforded by people like Mabel and Jim. Not unnaturally, they were all proud of having been saved from death. Not unnaturally, too, they one and all wondered what sort of people they were whose blood had kept the life from seeping away once and for all from their limbs.

Factory Explosion

The first three arrived together—Mary Smith, a woman of 45, Bert Hill, aged 37, and Tom Douglas, aged 23. Those three had been working together in a munitions factory. Two others who were with them when the explosion took place were killed instantly. What an explosion does to a human body can never be pleasant reading, but it is worth while, because of the sequel, to catalogue the injuries which were recorded on the case sheets when, more dead than alive, those three reached the hospital late that night.

Imagine yourself there as they hurried the three victims from the blacked-out street into the warm casualty ward. Take a look at Bert Hill, as he lies on the stretcher. His left foot is crushed, his left leg deeply lacerated, his left thigh and right leg badly torn. There is only one thing that can possibly save him. Without it he could not stand the necessary operation—for the surgeon has seen at once that Bert Hill must have both his legs amputated through the thighs.

Next to him lies Tom Douglas. His left popliteal artery (the main artery behind the knee joint) is torn in long shreds. The muscles of his calf are also torn. His right tibia and fibula are smashed and sticking

Digitized by Google

through his skin. His right leg must be amputated at the knee, and his left leg above the knee.

In the women's ward lies Mary Smith, with the blood pouring out of wounds in her head, her face, her hand, and with her left leg pulped and crushed. She, too, must lose that leg, from the middle of the thigh. . . .

That was two years ago. Now the three have walked into the room together.

None of those three had received an injury to a vital organ. If they had died it would have been from shock—from the loss of blood, and especially of blood plasma—bringing their hearts to a standstill. Now they are walking. Another triumph of modern surgery has made that possible, namely the astonishing steel movable limbs which, during their rehabilitation, were fitted to their stumps.

Bert and Tom have come from their work to the interview, for those crushed wrecks that had lain on stretchers with the life draining out of them two years before are now fit, useful members of society, trained as skilled engineers and carrying on in the very factory where the explosion had taken place. It took the blood of thirty-seven donors to perform this miracle.

Street Accident

The next person to enter the room was a cheerful young woman of 74—a wonder of a woman. This is what happened to her when she was run over by a motor bus. Her left leg was fractured, the muscles of her calf torn in shreds, her thigh-bone fractured and her knee joint pulped. She was almost dead as she lay in the hospital operating theatre, but she was immediately transfused with a pint of blood plasma and two pints of fresh blood taken from donors who came running to the hospital. Her left leg was amputated through the thigh. The artery behind the right knee was severed also, and so another pint of blood and another pint of plasma were dripped in while she was still in the operating theatre.

During the night they dripped in three more pints of blood and two more pints of plasma. During the next week gangrene developed in the injuries on the right leg, and ten days after, that leg, too, had to be amputated. Another pint of fresh blood was given. Quite soon after that, the old lady began to sit up in bed and take notice ; and now she looks like enjoying a peaceful old age, thanks to gifts of blood from nineteen different people.

The next comer, Fred Harvey, was a commercial traveller. He had not met with an accident. He had nearly died of a gastric ulcer. When he had been carried to the hospital his internal bleeding had led to almost total collapse. Nothing could have been done to save him but for the blood of four donors, and now he was on top of the world

Digitized by Google

again, able to eat anything, and eager to " sell " blood transfusion to the world.

Now came an air raid casualty, James Barclay. He had been on duty as an air raid warden when an incendiary bomb struck him full in the back of his thigh and knee, tearing away the fleshy parts and burning him severely. With the raid still at its height, his leg had been amputated that night ; the blood from five donors had helped him through. These five pints of blood had long ago been repaid by gifts from James's fellow air raid wardens.

Malignant Disease

Next came an enormous figure of a man. The little blue scars on his forehead and his right cheek might have told you at once what he was—a miner who had spent his life working at the coal face. He was tall and stout and grey-headed, and he had come that day from the colliery. Yet that man, only a few months before, was dying of cancer. It was one of those cases which are usually thought inoperable. He was almost a skeleton. To cut away the growth would in the old days have meant the loss of too much blood, but they took the risk, and with someone else's blood dripping into him all the time they cut away the thing which was killing him.

Now, blood transfusion is emphatically no cure for cancer. But thanks to blood transfusion this man at any rate is alive and useful to-day, and from the look of him he is thoroughly glad to be working again. He, too, has to thank two or three ordinary citizens who took half an hour off one day to give some blood.

The eighth to enter the room was Gertrude White. Twenty-nine years old, she had been sick and useless most of the time, and although she was still hardly what you would call strong she could now enjoy life and do useful work. She is one of the unfortunate ones. She was born with something wrong with her red bone marrow. Her body is unable to form red blood cells in sufficient quantity to give her strength. That means that every cell in her blood is, as it were, stifled and suffocated.

The usual method of treating such cases is to give them a special kind of liver extract, but with Gertrude White this had done no good. She could only sit back and waste her life. Then it was decided to try blood transfusion. Five pints of blood had been given her at various intervals, and though her red bone marrow will never be satisfactory, she is no longer a burden to herself and other people, but a useful if delicate member of the community.

Number nine was a member of the Home Guard, incapacitated by accident but cheerful still. He had been training with a gelignite bomb, which exploded and blew off his left hand at the wrist and the top joints of the thumb, index and middle fingers of his right hand. It

Digitized by Google

tore his face and his stomach wall and injured his eyes. The shock of it all would have killed him but for the gifts from six blood donors.

Maternity Case

And, finally, came a girl of 22, with a baby in her arms. She was a very pretty girl, and a very bright one, and any baby fancier would have said the same of the infant she carried. She would not have been alive but for the blood of six donors. Her child had been born normally and apparently successfully, but then, owing to unforeseen complications, the mother's own life had been endangered by loss of blood.

She described how she felt when they brought her into the ward. "I suppose I know exactly what it feels like to die," she said. "I just felt the life pouring away from me. Then I saw them put a bottle by the side of my bed, and push something into my arm. I lay there and watched the blood dripping down into me. They made it drip quite slowly, and I counted two thousand drops before I gave up, and with every drop I felt the life coming back."

* * *

Before this world war is over, many thousands more must make their gift of blood. One out of every ten men wounded will need blood given by civilians in Britain; and thousands of lives will be saved.

When the fighting is finished, the gift of life blood will remain. Just as mankind will benefit, on every day of peace, from penicillin, the sulphonamide drugs and other great advances in medicine which have been intensively developed in the stress of war, so the transfusion services will ensure that mothers and babies, workers injured in pit, field, factory, and street, who once would have died, will now live.

Digitized by Google


Digitized by Google


MH
MINISTRY OF HEA
DHS
DEPARTMENT OF
HEALTH FOR SCO

Digitized by Google

Digitized by Google

14 DAY USE
RETURN TO DESK FROM WHICH BORROWED
LOAN DEPT.
This book is due on the last date stamped below,
or on the date to which renewed. Renewals only:
Tel. No. 642-3405
Renewals may be made 4 days priod to date due.
Renewed books are subject to immediate recall.

OCT 13 1970 58

LD21A–60m-8,'70
(N8837s10)476—A-32

General Library
University of California
Berkeley

Digitized by Google